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ABSTRACT

The effectiveness of a behavior modification program combining cooperative learning with peer and self-evaluation was field tested with a group of 20 students in a 9th-grade class in beginning small engines. The students represented a mix of racial/cultural and economic backgrounds, were of average intelligence, and exhibited a variety of poor work habits and disruptive behavior. After an analysis of literature on disruptive behavior and its possible causes, a set of intervention strategies was formulated that included the following: a cooperative group learning program based on a set of project-developed illustrated engine parts assembly instruction sheets; instruction in self- and peer evaluation procedures and regular use of project-developed evaluation forms; and use of student-developed quizzes. The strategies were field tested for 6 weeks. Postintervention data confirmed a decrease in disruptive behaviors and poor work habits and an increase in student performance levels after the field test. (Appendixes constituting approximately one-third of this document include the following: tables summarizing initial data regarding students' work habits, disruptive behaviors, and performance; student sheets and illustrations dealing with engine parts assembly; sample peer and self-evaluation forms and data forms; sample student-generated quizzes; poststudy data; and illustrated study sheets. Contains 25 references.) (MN)

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CORRECTING INAPPROPRIATE CLASSROOM BEHAVIOR THROUGH THE USE OF COOPERATIVE LEARNING AND PEER AND SELF EVALUATION

by

*Fritz Krause

Submitted in partial fulfillment of the requirements for the degree of Master's of Arts in Teaching and Leadership

Saint Xavier University - IRI/Skylight
Field-Based Master's Program

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Abstract

Fritz Krause
May 1995 Site: Palatine, IL

Correcting Inappropriate Classroom Behaviors

The purpose of this report is to describe a project designed to minimize inappropriate classroom behaviors and improve student performance. The targeted group consisted of high school industrial arts students who represent a racially, culturally, and economically diverse population. The community is a rapidly growing one in a Chicago northwestern suburban area. The inappropriate classroom behavior in the form of poor work habits and disruptive behavior was documented by teacher observation and low levels of performance.

Through analysis of the problem setting and the data collected to document the problem, probable causes were identified. These probable causes included lack of motivation, inappropriate classroom structure, poor communication skills, and normal adolescent development.

After the identification of possible solutions through literature search and analysis of the problem setting, the strategies for intervention were chosen. The intervention strategies included cooperative learning along with peer and self evaluation procedures.

Post intervention data indicated a decrease in disruptive behaviors and poor work habits and an increase in student performance levels.

Chapter One

PROBLEM STATEMENT AND COMMUNITY BACKGROUND

General Statement of Problem

The targeted industrial arts students at Elgin High School exhibit inappropriate classroom behavior which interferes with successful participation in the shop setting, as documented by classroom observation and low levels of performance.

The Immediate Problem Setting

Elgin High School is a large high school according to student population figures (2,873 students, September 1993) and part of a large unit district incorporating three high schools. Elgin's enrollment figures show that the school population consists of 56.7 percent Whites, 27.1 percent Hispanics, 8.6 percent Blacks, and 7.6 percent Asians. There are 25.2 percent low-income students and 21.1 percent limited English students. Elgin's bi-lingual students are primarily Spanish speaking. The Illinois Goal Assessment Program (IGAP) report (1993-94) shows 21 percent of Elgin's grade 10 students did not meet the state's goals for Reading. Elgin's attendance rate is 94.2 percent and the chronic truancy rate is 2.5 percent. The Elgin High School graduation rate for the 1993-94 school year was 83.6 percent. (1994 Elgin High School Report Card).

Elgin High School's industrial arts teachers number 11 white male teachers with an average of 15 years teaching experience. All but three teachers hold Masters Degrees. Elgin's average class size is 17.6 students. (1994 Report Card).

Elgin's industrial arts department offers classes all eight periods of the day with a total student enrollment of approximately 1,000 students (1/3 of the school population). The large offering of courses includes classes in Building Trades/Woods, Small Engines/Automotive, Mechanical/Architectural Drafting, Printing, Machine Shop, Electronics, Metal Fabrication/Welding.

The targeted students exhibiting inappropriate classroom behavior are ninth grade students in a beginning small engines elective class of 20 students. Minority students represent approximately 50 percent of the 20 students who are in a small, cramped work area. The students are of average intelligence. The class is one semester in duration and includes six weeks of safety preparation, lecture, discussion, and demonstration. The remaining 12 weeks of the semester are hands-on-work.

Description of the Surrounding Community

School District U-46 which includes Elgin High School covers 90 square miles on the far western edge of the Chicago metropolitan area. It is the second largest school district in Illinois (per student population). The school district is experiencing rapid growth. Changes in the ethnic composition of the Elgin High School community over the last six years shows

that the percent of Hispanic students has doubled. Elgin High School has been designated the district's bi-lingual education service center with a 450 student enrollment in the program. Elgin draws 51 percent of its students from Elgin's east side (which includes public housing projects). Thirty-six percent of the students come from Bartlett where the median household income is $51,000 as opposed to Elgin's $35,000 (1990 census). Median housing value in Bartlett is $132,000 consisting of new subdivisions and the median value in Elgin is $96,000 (1990 census) consisting of old homes and housing projects (1994 Report).

Elgin is a major industrial center producing varied products. Three hospitals are also among its major employers. The community recently passed a School Bond Referendum by a small margin. This bond has previously been defeated several times. The district's operating expenditure per pupil (92-93) was $5,365.

Several Spanish, Black, and White gangs can be found in Elgin. These rival gangs pressure students to join. Although there have been several incidences in (or outside) of school, there is little associated fear apparent in the classrooms. Elgin High School has previously experienced graffiti on school buildings, but this no longer seems to be a problem. A "plain clothes" police officer is on patrol on the school grounds and in the building.

National Scope of the Problem

Inappropriate classroom behavior can take many forms, ranging from off-task behavior or low motivation to acting out behaviors such as verbal abuse and physical fighting. All forms of inappropriate behavior interfere with learning and performance, however subtle or blatant. "Statistics show a 1.25 grade-level-equivalent decline in the academic achievement of high school seniors between 1967 and 1980." (Bishop, 1992, p. 15).

U.S. parent attitudes are another topic of concern. Japanese mothers totally immerse themselves in their children's academic success (Stiles 1992). The breakdown of the American family and the Working Mother scenario has drawn away parental focus and support from school matters.

"Increased enrollment of immigrant and native-born language-minority students presents new challenges to school systems across the United States" (Lara, 1992, p. 16). The results of this increased minority enrollment include overcrowding, lack of funds, and disruption of the school community as it adjusts to the change. (Lara, 1992).

"According to the Children's Defense Fund, children are only 26 percent of the U.S. population, but they make up nearly half of the 2.1 million total number of Americans added to the ranks of the poor in 1991." (Peterson, 1993, p. 78) More than one in five children are living in poverty and trying to deal with the problems it causes.

"The problems of student discipline is a painful thorn in the flesh of public education." (Ban, 1994, p. 257) Ban (1994) goes

on to say that teachers are being expected to remedy student discipline problems. Over the years, teachers have tried to discipline unruly students; often in desperation, they have resorted to a wide assortment of discipline methods, ranging from the "hickory stick" and "dunce cap" to the more sophisticated method of bribery. No matter what methods teachers have employed against discipline problems, nothing has completely corrected the disruptive classroom behavior.

"While in years past a teacher's most common discipline problem may have been students chewing gum, today's teachers and administrators face a host of serious problems, including possession of weapons, drug trafficking, and physical violence towards both teacher and students." (Speirs, 1989, p. 9)

In 1992, in conjunction with the New York City Department of Health and the New York City Public Schools, a survery of violence-related attitudes and behaviors was conducted using a representative sample of New York City public high school students. This survey was conducted by using a self-administered questionnaire given to a representative sample of ninth through twelfth grade students enrolled in the New York City public schools during June 1992. The survey results referred to incidents occurring during the 1991-92 school year while the students were inside the school building. The results of the surveyed students shows them "being threatened, 14.4%; carrying a weapon, 12.5%; carrying a knife or razor, 10.0%; being involved in a physical fight, 7.7%; and carrying a handgun, 3.7%." (JAMA, 1993, p. 2032) Although the survey shows a decrease in weapon-carrying in schools where

metal detectors were used, there was no apparent effect on the prevalence of threats and physical fights in any location as a result of metal detectors.

Compared with all surveyed New York City public school students, "students who were involved in a physical fight in school, during the 1991-92 school year, were less likely to believe that apologizing (30.1% versus 19.0%) and avoiding or walking away from someone who wants to fight (55.5% versus 35.5%) were effective ways to avoid a physical fight, and they were more likely to believe their families would want them to hit back if someone hit them first (56.9% versus 77.9%)." (JAMA , 1993, p. 2032)

The survey results seem to suggest that the violent behaviors reflect not only the attitudes of the students surveyed but the attitudes of their parents as well. "In 1992, the New York City Public Schools instituted peer mediation centers and conflict resolution negotiation curricula for high school students." (JAMA, 1993, p. 2032)

An editorial appeared in the National Review, February 1994, that discussed the efforts of some to undermine Cincinnati's tough school discipline code because of a "disparate impact" on black students. Students in the Cincinnati public schools who disrupt classes or endanger others receive stiff penalties. "Cursing at a teacher pulls mandatory suspension." (National Review, 1994, p. 22) As more blacks than white students are penalized under the present system, a court settlement recently proposed that records be kept of not only the race and gender of

the students involved, but also there would be records verifying the race and gender of the teachers referring students for disciplinary action. These records would be used in teacher evaluations. "What they amount to, at least inferentially, is a system of racial quotas in school disciplinary cases." (National Review, 1994, p. 22)

The issues discussed have included declining student performance, parent apathy, increased minority school enrollment, increasing incidents of serious school disciplinary problems, inappropriate student attitudes towards violence, and the efforts of some to undermine tough school disciplinary codes because of seemingly unfair persecution of certain racial groups. These issues affect students regionally and in some cases nationally.

Elgin High School also experiences problems with low student performance and parent apathy. Minority student enrollment has increased and poverty is part of the Elgin High School community. School violence is on the rise in Elgin High School, although to a lesser degree than the violence found in major metropolitan areas. The teacher/researcher's goal, therefore, is to correct the inappropriate classroom behavior and improve student performance in the targeted industrial arts class at Elgin High School. Evidence of such behavior, along with its probable causes, will be discussed in the following chapter.

Chapter 2

PROBLEM EVIDENCE AND PROBABLE CAUSE

Problem Evidence

Teacher/researcher observation was used to document the extent of inappropriate classroom behaviors. These behaviors fell into two major categories: work habits and disruptive behaviors.

The teacher/researcher observed the targeted class and kept records of its work habits for a period of three weeks in October 1994. (Appendix A, B, C) A summary of the results follows: eight of the 20 targeted students (40 percent) displayed inappropriate classroom behavior in the form of poor work habits. A total of 175 incidents of poor work habits were recorded. This is an average number of 12.5 incidents per class period. Thirty-four percent of these incidents involved off-task behavior. Twenty-two percent of the behaviors involved low productivity or the inability to complete a task on time. Thirty-three percent of the behaviors were the inability to work independently, in an organized manner, or to follow instructions. Ten percent of the incidents involved careless or impulsive work behaviors.

The teacher/researcher observed the targeted class and recorded disruptive classroom behaviors for three weeks in October 1994. (Appendix D, E, F) A summary of the results follows: eight of the 20 students (40 percent) displayed

disruptive classroom behaviors. A total of 73 separate incidents were recorded. This is an average of 5.16 incidents per class period. Sixty-one percent of the behaviors involved a general disruption of the class resulting in an interruption of the learning environment. Twenty-five percent of the recorded incidents involved verbal or physical abuse directed towards the teacher or other students. Fourteen percent of the behaviors involved excessive tardiness or truancy.

Student performance levels were examined as the final step to document the extent of and the effect of inappropriate classroom behaviors. Over a period of three weeks in October 1994, the teacher/researcher's grade book showed low performance scorces by eight of the 20 (40 percent) targeted students. (Appendix G, H, I) This low performance was documented by low or failing scores on weekly quizzes, poor class participation during oral question/answer sessions, and incomplete daily reference notebooks. Low performance was also documented by low participation scores for hands-on work. Upon closer observation, the teacher/researcher's grade book revealed that the eight students with low performance scores were the same eight students whose names appeared on the the lists of inappropriate classroom behavior.

The data presented in the form of classroom observations and student performance levels has documented the existence and extent of the problem. The targeted students exhibit inappropriate classroom behaviors that interfere with successful participation in the shop setting.

Probable Causes

Why are the targeted industrial arts students exhibiting inappropriate classroom behaviors?

The Elgin High School community has been growing rapidly, adding to its population an ever increasing number of students which adds to the overcrowded classroom problem. These students have limited English skills affecting both their reading and writing abilities. The targeted industrial arts class is plagued with resulting problems; over-crowded conditions and a large percentage of limited English students, making communication stressful.

In some cases, the class attendance records of the targeted students implies a lack of student motivation. In other cases, classroom observation indicated the inappropriate behavior may be the result of poor work habits, namely off-task behaviors. The students inability to work independently in an organized manner may precipitate the off-task behavior. Lack of appropriate effort, whether it be motivational in nature or due to other circumstances, results in off task behavior. Further classroom observation implies that general disruptive behaviors, such as talking out of turn, constitute a large percentage of the inappropriate behaviors which in turn implies the lack of appropriate classroom structure.

Literature suggests several reasons for inappropriate classroom behavior that are relevant to the problem setting. According to Stiles (1992), low student motivation or apathy and resulting low achievement may be the result of what he calls

student isolation from their parents. Stiles contends that students, from families where communication and support are strong tend to relate to teachers better, which in turn enhances their motivation and achievement. According to Bishop (1992), the lack of a close mentoring relationship between the students and the teacher, similar to that of coaches and athletes, may be responsible for low student motivation.

According to Burke (1992) family stress caused by low socioeconomic status may manifest itself among students in the form of acting out behaviors. Contributing to the problem is the possible language barrier of minority students, and the feeling of isolation and helplessness associated with gang violence.

According to Peterson (1993), there are three underlying causes of increasing behavior problems; poverty, poor health, and loneliness. Although behavior management techniques help to reduce the inappropriate behavior once it has occurred, they do nothing to get at the cause of the behavior. The poverty, poor health, and loneliness are still there. Poor health is an issue closely related to poverty. Poor children often times are not immunized and they lack adequate health insurance. Children who come to school hungry, with injuries, or with chronic health problems are bound to disrupt the learning environment. Loneliness crosses all socioeconomic lines. These children crave adult attention and are often times withdrawn and have trouble concentrating. (Peterson, 1993)

According to Thompson (1994) in his article titled "Discipline

and the High School Teacher," he states that all behavior is caused. Thompson points out that the adolescent is striving for independence. This involves "risk-taking" which at times may result in what is called misbehavior. Thompson goes on to say that the "institutionalization" of schools appears to increase maladaptive behavior. This is due to the increased social pressures found in any institution setting. Furthermore, Thompson points out that because of "universal schooling," we force into a school situation students who have no desire to be there. Thompson points out that another cause of misbehavior lies in the fact that because of our increase in the use of technology in schools, increased demands have been placed on students, leading to inappropriate student behavior.

In the article titled "How to Create Discipline Problems," reference is made to the fact that teachers may be responsible for creating discipline problems. "Just as we teach the way we were taught, we tend to discipline with the same ineffectual methods that were used on us." (Wasicsko & Ross, 1994). This article speaks to the fact that discipline problems should not be totally eliminated. "When children are enthusiastic about learning, involved in what they are doing, and allowed to express themselves creatively, discipline problems are apt to occur." (Wasicsko & Ross, 1994). Teachers need to remind themselves that "robot-like obedience" is not their major goal, but instead their objective should be to help their students reach their maximum potential as individuals. (Wasicsko & Ross, 1994)

According to Howard (in Benard, 1992) one way schools alienate

students and cause discipline problems is that they do not expect much from their students. This low expectancy translates into low student motivation. Low expectancies affect behavior in this way. First, they affect the student's confidence level, which in turn affects the amount of effort the student is willing to put forth. Second, students who expect to fail at a task will attribute their failure to lack of ability. From then on, the student will probably not approach the task with much enthusiasm. "What we see here is the beginning of a vicious cycle of self-fulfilling prophecy, which for many youth is their daily experience of school." (Benard, 1992, p.18)

In addition to this, Weinstein (in Benard, 1992) states that discipline problems caused by low expectancy are further aggravated by inappropriate classroom structure and organization that does not meet the learning needs of the students. Weinstein (in Benard, 1992), contends that such classroom structure as improper grouping, competitive rather than cooperative strategies, and curriculum that is not meaningful to the students may be responsible for student discipline problems. According to Weinstein (in Benard, 1992), further discipline problems may be caused if the teacher fails to address student multiple intelligences and evaluate accordingly, being careful to elicit active student participation and decision making in their learning.

Lara (1992) speaks to structuring the classroom to meet the learning needs of limited English students. "How well students adjust to their school environment and whether they ultimately succeed academically depends on their individual characteristics

and the support provided by their families, the school system, and society in general." (Lara, 1992, p. 13) Lara contends that the failure of schools to provide appropriate language services and other non-instructional services as needed to meet the needs of limited English students can translate into student discipline problems. Improper teaching modifications involving what is taught, and how it is organized, delivered, and assessed will affect the performance of limited English students and precipitate student discipline problems. (Lara, 1992)

"McDaniel argues that the quality of a teacher's discipline program ultimately rests on the quality of his or her instructional practices, ability to get along with children, and ability to convince young people that school is important." (in Burke, 1992, p. xxiii) McDaniel goes on to say that if the teacher fails to establish a nurturing atmosphere and fails to respond to the different learning modalities of the students, the stage is set for discipline problems to arise.

In 1980, Dinkmeyer, McKay, and Dinkmeyer (in Burke, 1992, p. 210) Explained discipline in these terms: "Underachievers may seek attention, power, or revenge, but they all have underlying feelings of inadequacy." Students who feel inadequate may perceive life as "unfair" because their efforts do not meet with success. Often times students become discouraged and develop negative self-concepts which may lead to complete withdrawal in some cases, eventually becoming drop-out statistics according to Dinkmeyer and Losoncy (in Burke, 1992).

Glasser (in Burke, 1992) explains student discipline problems

in this way: Glasser refers to the 50 percent of students who will not go along with the program. These students refuse to sit and be talked "at" about matters that are not relevant to them. These students, instead, will "fight back" by displaying negative behavior. Glasser contends that we have failed to meet the needs of these students.

To summarize, in identifying the probable causes of inappropriate classroom behaviors, whether they involve poor work habits or disruptive behavior, four major categories come to mind. The four categories are: low student motivation, improper class structure, communication problems, and normal adolescent development.

When students are not motivated to learn, inappropriate classroom behavior will occur. Why are students not motivated to learn? There are many reasons why. Students who lack support from their parents or teachers or students who are in poor health or under stress for various reasons will, most likely, not be motivated to learn.

Students who feel inadequate, lack self-confidence, or fail to see the relevance in what they are learning will probably not be motivated to learn.

When the classroom structure is not meeting the needs of the students, they will, most likely, exhibit inappropriate classroom behavior. In what ways can the classroom structure fail to meet the needs of the students? There are many ways; improper teaching and assessment methods that do not take into account the students' primary languages, different learning modalities, and multiple intelligences.

Communication deficits that are not remedied by teaching modifications, language support, academic support, and non-instructional support will not allow for student success. Without student success, inappropriate classroom behaviors will, most likely, follow.

Normal adolescent development is characterized by the desire for independence, which involves risk-taking. The increased social pressures and increased academic demands are not always in sync with the adolescent's desire for independence, hence inappropriate classroom behaviors can occur.

But what are shop classes like today? What does the adolescent student face in shop class? What demands have new technology placed on the shop student? Today computers are common in shop classes, but the method of instruction has remained the same. First the students must learn the fundamentals before they can use the computer to do the manual labor with ease. "In the vocational classroom, students not only study with computers, they often are making parts and accessories to further expand their computer's capabilities." (Harding, 1990) This allows for older equipment to be connected to a computer so that operations can be computer controlled. Today computer-assisted instruction and interactive video are part of the shop class. What will tomorrow bring?

In this chapter probable causes of the inappropriate classroom behavior in the problem setting have been identified. The following chapter will look at ways to correct inappropriate behavior in the shop setting.

Chapter 3

SOLUTION STRATEGIES AND ACTION PLAN

Chapter two identified probable causes for the inappropriate classroom behavior of the targeted Elgin High School industrial arts students. As identified by literature review, Chapter three will address possible solutions for the identified problems.

Solution Strategies

After a thorough literature search, possible solutions were identifed. These solutions are discussed under various headings; motivational techniques, discipline procedures, classroom structure, improved communication, and classroom climate.

Motivational Techniques

As discussed in Chapter two, low student motivation is one probable cause for the inappropriate classroom behavior of the targeted students. Clifford (1990) addresses low student motivation in an article describing the correlation between challenging activities, student motivation, and successful learning. Clifford contends that one way to raise student motivation is not by allowing easy success, but by providing learning activities that involve a moderate amount of risk-taking or challenge. This will energize students. This idea is compared to the juvenile video arcade addict who won't give up until he masters the game. But how do we get students

to participate in risk-taking learning activities? After all, in the present educational arena, grades are what counts.

Clifford suggests that to encourage students to take academic risks, they first must be offered activities that vary in degree of difficulty and probability of success. The students must be allowed to choose freely from the risk-taking activities. Secondly, as the task increases in difficulty, so must the pay-off for success. A bigger pay-off serves to entice the student. Thirdly, Clifford contends that the environment be tolerant of error making and supportive of error correction. This creates a real learning environment. Immediate informational feed-back is a necessary component of the classroom. Furthermore, Clifford states that the risk-taking activities be an optional part of the course. They should never be mandated. This only serves to make them unattractive to the students.

Another way to encourage students to participate in risk-taking activities is to offer non-graded activities, and assess them only as to improvement over a previous activity. Lastly, giving students the option of working together may entice them to try new challenging learning activities (Clifford, 1990).

Encouragement is another way to address low student motivation. As Scrofani (school psychologist, personal communication, Oct. 19, 1994) puts it, "Discouraged students don't try. Encouraged students will work."

But how do we encourage students? Scrofani uses the "spilled milk scenario" to explain how encouragement works. If the child is not allowed to pour the milk, the adults are, in effect, sending the message that the child is not capable. This message squelches the child's self-confidence and independence. Feelings of low self-esteem lead to discouragement and the "I can't do it" scenario. Students who believe that they can't handle the situation or class are discouraged and unmotivated.

Scrofani gives several suggestions for encouraging students in the classroom. They are as follows: show genuine enthusiasm and interest, focus on student effort, encourage student commitment, encourage mutual feed-back, help students find alternative ways to solve any problems, and be a good listener. Scrofani warns against responses that interfere with encouragement. These include: being demanding, criticizing or lecturing the student, and threatening the student. In general, Scrofani subscribes to showing confidence in the student and avoiding focusing on mistakes.

Scrofani differentiates between praise and encouragement. Praise is to be avoided because it conveys to the students that they are worthwhile only when they please others or when they are "the best."

According to Bishop (1992), student motivation can be enhanced by close mentoring relationships between students and teachers, similar to that of coaches and athletes. Furthermore,

Bishop contends that one way to foster such a relationship would be to relieve the classroom teacher from the responsibility of grading his students. It is difficult for the teacher to be both a coach and a judge simultaneously. Bishop favors external assessments to motivate students, namely exams that measure high school academic competency. An example of this would be The Certificate of Initial Mastery that was proposed by the Commission on the Skills of the American Workforce (1990). "We are the only industrialized country in the world that does not have a system providing externally graded competency assessment keyed to the secondary school curriculum." (Bishop, 1992, p. 16). In other countries, these exam grades are part of the student's job resume and employers ask for these scores on their job applications. This kind of external assessment makes a direct link between school and work. Students would be motivated to learn and achieve, as it would have a direct bearing on their future jobs.

Curwin and Mendler (1988) agree with other colleagues that student motivation is a deterrent to discipline problems. Curwin and Mendler (1988) cite several motivational strategies according to Borger, Carroll, and Schiller. They are as follows: Increase response from "all" students, exhibit high expectations for your students, encourage students to persist with difficult problems, give positive feed-back, use cooperative learning, use competition carefully with emphasis on achievement rather than on winning and losing, use student self-

evaluation, keep pace with the natural attention span of your students, give students a strong sense of purpose for the lesson, and stimulate learning through fun, interesting, and challenging activities.

Discipline Procedures

Now that we have examined motivational techniques as a way to enhance learning and minimizing inappropriate classroom behavior, let's look at what the experts say about discipline. What can be done to prevent discipline problems from occuring? And, how to correct them when they do occur?

Curwin and Mendler in their book Discipline With Dignity, 1988, have laid out a foundation for an effective discipline program. Here are some of the principles of their discipline plan. 1) It is necessary to have clearly defined rules for the teacher and students and specific consequences that are consistently implemented when rules are broken. 2) Match the instructional level to the students' ability level. Students will act out as a defense against feeling like a failure or against being bored. 3) Listen with empathy to students' feelings. 4) Be respectful of your students. 5) Vary your style of presentation: alternate between lecture, discussion, large groups, small groups, etc. for maximum attentiveness and to avoid restlessness that can lead to disruptive behavior. 6) Use non-verbal displays of caring and concern (a pat on the back, etc.). This helps to establish bonds with the students.

And, lastly, 7) the teacher needs to be responsible for his/her actions and the students need to assume responsibility for their actions.

This last principle forms the basis of Curwin and Mendler's Responsibility Model of Discipline. In this model, students are responsible for helping to develop the class rules and consequences for breaking those rules. This fosters critical thinking and promotes decision-making, as well as raises student motivation to follow the rules. The students learn that they can have some control over what happens to them, but they must also take responsibility for their actions. The Responsibility Model of Discipline improves communication in the classroom as well as maintains student dignity. (Curwin/Mendler, 1988).

A lot has been said about rules and consequences, but what exactly constitutes an effective consequence. Curwin and Mendler (1988) abide by consequences that are consistently implemented, that are clear and specific, and that include a range of alternative choices (including a positive consequence or reward for appropriate behavior). Consequences must also relate to the rule as directly as possible, in other words, be a natural or logical consequence of the situation. Lastly, an effective consequence teaches the students a better way to behave rather than punishes them. Natural/logical consequences give the student a chance to make amends for his irresponsible behavior and to maintain his dignity because the consequences

are not punitive. This is the basis of the natural/logical consequences recommended by Curwin and Mendler. The consequences are a reminder to students to maintain appropriate classroom behaviors.

Curwin and Mendler (1988) contend that not only should discipline plans include natural or logical consequences for negative classroom behavior, but also that appropriate behavior should be reinforced with what they call positive consequences or rewards. Curwin and Mendler contend that rewards work to enhance appropriate behavior and raise student motivation. These rewards can be in the form of special privileges granted and/or in the form of verbal praise.

Curwin and Mendler (1988) admit that praise has its shortcomings. It can be manipulative, doled out to increase a desirable behavior. Students become "hooked on praise." They come to depend heavily on the approval of others. The students begin to lose their ability to self-evaluate and make decisions. Students may also manipulate adults by down-grading themselves in an attempt to receive praise.

Even though praise has its shortcomings, Curwin and Mendler (1988) believe that it can also have a positive effect on students. "Praise can help people master basic skills, work harder for certain extrinsic goals, and overcome extreme cases of poor self-concept." (Curwin and Mendler, 1988, p. 85) They contend praise is useful for students with special learning disabilities and emotional problems. Praise enables these

students to feel good about being able to learn. Curwin and Mendler suggest praising the behavior and not the child. Also they suggest that praise should include the reason why something is good and should not be overdone.

Implementing positive consequences is easy, but how do teachers implement the natural consequences agreed upon for inappropriate classroom behavior? Curwin and Mendler (1988) suggest that the teacher implement the consequence by simply stating the rule and consequence, using a soft but firm voice while making direct eye contact with the offender. The teacher should maintain close proximity to the student (conversation distance), making sure that the consequence is delivered as privately as possible. In this way, the student's dignity remains intact and it prevents the power struggle that may ensue if the student feels that he must "save face." The teacher should be careful to avoid an overly aggressive approach (which creates hostility), although it is necessary to maintain a tone of voice and body posture that shows no intimidation.

What can a teacher do when the student refuses the consequence or argues in class? How can the teacher maintain control in this situation? Curwin and Mendler (1988) suggest the teacher avoid a power struggle by simply practicing active listening (paraphrasing and restating the student's feelings). For example, "I understand you are upset; we will discuss the problem later."

What can be done if more than one student is acting out? Curwin and Mendler (1988) suggest dealing with the "leader of the group" first. If this doesn't stop all the misbehavior, then continue to deal with the students one by one. If the students are in close proximity (at a table together), the teacher can deal with them as a group, making eye contact with each individual student first before speaking and slowly scanning the group, maintaining eye contact as he speaks.

But what can be done to maintain discipline in the class where some of the students are always out of control, those who use destructive behavior to make them feel in control. Curwin and Mendler (1988) offer some creative discipline techniques. For the student who exhibits verbal abuse, they recommend audio and/or videotaping the student. The taping can be shown or listened to by the student and/or parents. This method has been extremely effective for verbal abuse. Curwin and Mendler also suggest role reversal: asking the disruptive student to assume the role of teacher, while the teacher "acts out." Curwin and Mendler also suggest that the teacher "answer improbably" or give an unexpected answer that will throw the disruptive student "off base."

Furthermore, Curwin and Mendler (1988) suggest other strategies for the "always out of control student." One strategy is the individual social contract, which elicits student cooperation through negotiation between student, teacher, and a mediator. The individual social contract may

involve program modifications for the student, and positive and/or negative consequences. Other aspects of the individual social contract are as follows: "everyone" involved has a responsibility to address the problem, the teacher "shows faith" in the student's ability to correct the behavior, realistic goals are set, and there is an on-going communication system.

Curwin and Mendler (1988) give other suggestions for the "always out of control" student. These include a "points earned and lost" system for positive and negative behavior. In some cases, ignoring the behavior (not giving it attention) may also stop it or decrease it.

William Glasser differs from Curwin and Mendler in his ideas concerning discipline in the classroom. Glasser, in his 1965 book Reality Therapy, states that one of the basic needs of people/students is the need to feel worthwhile. (in Reinert, 1980) To achieve this feeling, one must maintain satisfactory behavior by correcting one's own inappropriate behavior and approving of oneself. Glasser's Reality Therapy did not rely on direct reinforcement of appropriate behavior or, in other words, on praise or rewards.

In Glasser's recent book, The Quality School - Managing Students Without Coercion, (1990), he states that his approach to students who are involved in doing quality schoolwork will not be disruptive in the classroom. But how do we get students involved in doing quality schoolwork? Glasser contends that to

do this, the teacher must meet the five basic needs of human beings/students. These needs are: power, love/friendship, fun, freedom, and survival. This is the basis for Glasser's Control Theory, which states that as human beings we are always trying to meet our five basic needs and our behavior is the result of our attempt to do this.

To meet the basic needs of students and therefore have a quality school (where students are doing quality schoolwork) Glasser (1990) states that teachers must be "lead-managers" rather than "boss-managers." Bosses coerce their students (to no avail) to produce quality work. "Lead-teachers" stimulate learning by introducing a creative and caring attitude in the classroom.

Glasser (1990) contends that creative environments should include cooperative learning. "Research shows that when there is a lot of interaction, often noisy, students learn more." (Glasser, 1990, p. 53). Interviews with students also suggest that cooperative learning meets the students' need for power/belonging.

Glasser also contends that students will work hard and do quality work for a teacher that they feel is their friend. Glasser believes it is important to have students' input; he welcomes suggestions from students as to how to make the learning more enjoyable. Furthermore, Glasser contends that students will not do quality work unless they can see the benefit in their life that will come from doing the work.

As mentioned previously, in 1965 Glasser was not in favor of rewards for appropriate behavior. However, in this book, The Quality School - Managing Students Without Coercion, (1990), Glasser believes that the students should have the power to reward themselves. This is in keeping with Glasser's 1965 idea of "correcting onself and approving of onself." Glasser (1990) not only believes in approving of oneself, but also in rewarding oneself. Furthermore, Glasser states that the reward must be, not only, planned by the entire class, but that total participation (including the teacher) must be a component of the reward. Glasser does not believe in individual rewarding. The teacher does not set the reward; Glasser believes that this would be an attempt to be coercive. Glasser contends that the teacher's true power lies in the students' perception of him/her as someone who is a competent leader.

But what does Glasser (1990) suggest a teacher should do when discipline problems occur? He suggests the idea that the teacher's attitude should be one of helping the student to solve his problem and therefore eliminate the disruptive behavior. The teacher should help the student find a way to do quality work. Glasser states that the student who does not respond to the teacher's attempt to solve the behavior problem, should be sent to a "time-out room" where he will stay until he begins to solve his problem with the help of the time-out counselor. In this way, the time-out counselor can give the student the extra attention he wants or needs.

Another point Glasser (1990) makes is that teachers need to defuse situations before they reach crisis proportion. Taking the time to listen to a student who is a potential troublemaker is well worth the teacher's time and effort. The students will model the teacher's caring attitude and they will attempt to solve their problems as well as help others with their problems.

Glasser (1990) contends that criticizing, arguing, threatening, and punishing must be avoided by the professional staff, instead they must relay the message that the student is responsible for solving the problem and doing quality work with their help. Glasser states that using detentions and suspensions (punitive measures) will not solve the disruptive behavior problem, but only serve as an immediate way to alter the problem. Detentions and suspensions do not deal with getting the student involved with quality work.

Kohn's (1991) position on punishment as a solution to inappropriate classroom behavior is that it is ineffective in the long run. Kohn agrees with Glasser that punishment only produces immediate change, but does not address the real problem. Kohn does not distinguish between punishment and consequences. He states that they are essentially the same. Kohn states that punishment/consequences, such as isolating the student, giving him a failing grade, or overloading him with extra work (or even threatening to do any of these things), does not serve to correct inappropriate classroom behavior beyond

the immediate realm. Why doesn't punishment work? Kohn states that punishment does not show the student what he is supposed to do, but only focuses his attention on how he can avoid detection in the future. The student learns to avoid the punisher (teacher). Furthermore, Kohn states that punishment only breeds resistance and resentment as the teacher is using power to control the student.

What is Kohn's position on rewarding students in the classroom? Kohn equates rewarding students to bribing them. Kohn states that rewarding students for appropriate behavior does not guarantee appropriate classroom behavior in the future. Kohn (1991) states that rewards, in the form of gold stars, high grades, special time, candy, praise, etc., are an attempt to manipulate the students' behavior. When the reward is removed, the students have no reason to continue to act appropriately. Rewards do not help students to develop a commitment to being respectful. Kohn states that studies show that using rewards to encourage prosocial behavior does not enhance intrinsic motivation in students.

What does Kohn (1991) say about rewards to stimulate learning and achievement? Does this work? Kohn states that motivational researchers concede that rewards undermine creativity and intrinsic motivation. This is because ultimately the student feels controlled and therefore finds it difficult to become totally involved in the task. Kohn states that

rewarding someone essentially states that the task is not worth doing unless rewarded.

Classroom Climate

In Chapter Two, the possible identified causes of inappropriate classroom behavior included lack of support from the students' families and the isolation associated with gang violence. In either case, the students lack a sense of caring for others. This is why a "caring classroom climate" is very essential to promote learning and prevent disruptive behaviors. What do the experts say teachers should do to promote positive classroom climate?

Kohn (1991) states that the key to preventing disruptive behaviors is to help students act responsibly because they understand it is the right thing to do; in other words, encourage their commitment to prosocial values. The question is "What kind of person do I want to be?" and "How do we want our classroom (or school) to be?" (Kohn, 1992, p. 502)

The question is how do we get students to act more responsibly? Kohn (1991) believes that the attitude of the teacher is important. If the teacher believes a student will act destructive or disruptive, he probably will. Kohn believes students want to please the teacher, but simply lack the skills to get what they need. He believes that students will respond to a caring environment.

Kohn (1991) contends that another way to elicit responsible student behavior is to be a good role model. A teacher who expresses concern and a willingness to help will find his students acting accordingly. Furthermore, Kohn suggests devising lessons that address social and ethical issues as well as encouraging perspective-taking. This can be integrated into the regular curriculum.

According to Stewart (1993), creating a positive classroom climate depends on the teacher's frame of mind. Stewart contends that students will be focused and motivated to learn when there is a positive air in the classroom. Students' attentions are distracted when a negative mood exists. The teacher sets this positive mood by being happy, in other words, by putting aside any negative, self-limiting, self-defeating thoughts. Instead the teacher needs to believe in the students' ability to do their best. Stewart contends that "unteachable moments can be changed to teachable ones by changing the mood" (Stewart, 1993, p. xi). This is easily accomplished when the teacher is in a positive, composed state of mind. In this way, the teacher is able to tap into his/her deepest intelligence, common sense, talents, abilities, and creativeness.

Glasser (1993) speaks of a positive classroom climate in terms of students involved in doing quality schoolwork. In Glasser's book, The Quality School Teacher (1993), he suggests that a teacher who is interested in quality schoolwork from his

students will focus on addressing student interests. To further explain this idea, Glasser states that the teacher should also teach what interests him. If the students like the teacher, they will become interested in what he is presenting. The teacher can capture their attention, and be one step closer to quality schoolwork and a non-disruptive classroom.

Glasser (1993) makes a few points in regards to the value of non-academic work such as art, music, drama, and vocational education. It is through these types of courses that students most often pursue quality work and learn to work in a cooperative group. The pursuit of quality work often carries over to academic subjects. Realizing this, the quality school teacher encourages his students to pursue the arts and/or the vocational areas. A quality school teacher also attempts to link the academics and arts together in the classroom to facilitate the transfer of quality work from one to the other.

Glasser (1993) states that this is not to suggest that the arts and vocational courses are only useful as a way to stimulate learning in the academics. On the contrary, Glasser states that art and vocational courses teach the student something he feels is useful in the real world and gives him a reason to stay in school. Students who feel the class is useful to them will not be a disruptive class member.

What about competition in the classroom? What do the experts say about it? Is competition a part of a healthy and

positive classroom climate? Curwin and Mendler (1988) believe competition can be a positive learning experience if used properly. Curwin and Mendler advocate competition that is totally voluntary; students will compete on a level that is comfortable for them. Competition must focus on the means or process and not the outcome or score. Teamwork can be a positive experience, and, as long as the outcome is not important, there will not be a high stress level. Therefore, competition with a focus on the process can be stimulating and motivating.

Kohn differs from Curwin and Mendler in his view of competition. Kohn believes that competition has no place in a positive classroom climate. Kohn (1986) speaks against competition in his book, No Contest - The Case Against Competition. Kohn relates aggressiveness to competition by stating that competition is a hostile encounter. Kohn contends that competition leads human beings to become more aggressive, whether they are the winners or losers, because of its frustrating nature. There is always present in competition the threat of defeat and the unpredictability of the outcome.

Kohn (1991) feels that what is wrong in today's classrooms is a lack of caring for the fellow student. He feels that there is too much competitiveness between students and not enough cooperation. Kohn believes it is the teacher's job not just to teach subject matter, but also to teach prosocial behaviors and

values. He states that one way to not only enhance learning, but develop prosocial behaviors as well, is to institute cooperative learning groups. Kohn states that students need training in cooperative conflict resolution and need to learn methods of achieving their goals without using force or manipulation. Kohn states that studies show that children who are taught to imagine how others think and feel have, in turn, developed good problem solving skills, enhancing their academic performance.

Kohn (1991) suggests cooperative learning with student working pairs or small groups. Kohn states there are many cooperative learning models; to be avoided are those that depend on grades and other extrinsic incentives to insure that students work together.

Classroom Structure

Educators know that the structure of a classroom is very important in maintaining discipline and enhancing learning. This section will identify important considerations for the educator to examine in his/her attempt to structure the classroom to meet the needs of the students.

One way to structure the classroom is to institute cooperative learning. Burke (1992) sees cooperative learning as a way to help teachers make learning more meaningful and motivating. In addition, interactive learners develop necessary

social skills and a sense of belonging that is so very important. "The cooperative learning model incorporates teamwork, higher-order thinking, social skills, leadership roles, and active learning in the classroom." (Burke, 1992, p. xv).

Burke cautions teachers that cooperative learning groups need to be planned in advance. The teacher must set the climate for group learning by generating interest in the subject matter and attempting to bond his students. Furthermore, the teacher must set up the group procedures carefully and establish rules and consequences. And most importantly, Burke cautions teachers to teach students the necessary social skills (listening, sharing, taking turns, helping one another) before implementing cooperative groups. One way for the teacher to teach social skills is to model the appropriate behavior. (Burke, 1992)

Burke (1992) makes several suggestions to facilitate cooperative group learning. First, she suggests structuring groups to include students of different races, sexes, and ability levels. She cautions teachers to carefully group their students, taking into consideration not only their ability levels, but also their personalities, learning modalities, and behavior patterns.

Structuring the class to meet the learning styles of the students is not only crucial to their success, but also an important factor in maintaining classroom discipline. Curwin and

Mendler (1988) state that effective teachers are those that vary their teaching styles to involve all the different learning styles of their students. Varied teaching styles also help eliminate attention span problems which lead to off-task behavior. The varied teaching styles suggested by Curwin and Mendler include lecture, whole class discussion, small group discussion, independent seat work, and cooperative group learning incorporating different style learners.

What is important is that the teacher addresses the needs of the learner, both those who function in an open structure and those who need to function in a closed structure of learning. A student who needs a closed structured learning environment may need help with organization. The task needs to be broken down into individual steps, which are presented one by one to avoid confusion. According to Curwin and Mendler, the student needs to be held accountable for his work, but it is the teacher's responsibility to see that his efforts meet with success.

Curwin and Mendler (1988) advocate that off-task behaviors add to classroom discipline problems. Therefore it is important to increase the students' time on task. Curwin and Mendler suggest the best way to do this is to increase the students' desire to participate by making the task meaningful, fun, interesting, and appropriately challenging. Furthermore, classroom work needs to be "just enough" (not overwhelming);

it needs to give the student choices and positive feedback, as well as allow for group work when appropriate.

Cooperative learning is one way to structure the classroom to meet student needs, but what can a teacher do when problems arise within the cooperative group? Burke (1992) states that students might become disruptive during group learning if their task is too difficult for them. Out of frustration they will "act out." Burke suggests observing the student to see what is frustrating him and/or conferring with him to determine what is the cause of his frustration. She suggests simplifying the task, and to reinforce positive behavior, she suggests social rewards of appreciation, attention, compliments, etc.

Burke (1992) also gives other suggestions to deal with inappropriate behaviors in a group situation. Burke advises to check for learning disabilities and recommendations of specific accommodations for the student. Burke suggests observing the student closely for triggers of inappropriate behaviors, perhaps caused by another group member. Burke advises pairing the disruptive student with a supportive one and giving him a role that will make him the center of positive attention. Furthermore, Burke suggests keeping a tally of types of activities that seem to cause the most aggravation and frustration for the student. One last suggestion Burke makes in an attempt to correct inappropriate group behavior is to review the necessary group social skills with the student, his group,

or the entire class. If all else fails, Burke suggests removing the disruptive student from the group until he can calm down. However, this will deal with the problem on the surface level, but it does not address its causes.

The question is; "what really makes cooperative learning work?" The experts have some ideas. Deutsch (Strother 1990) claims that successful cooperative learning requires that students be motivated to help one another and be accountable not only to themselves but also to the group. Slavin (Strother 1990) suggests giving group recognition in the form of certificates or small rewards to groups whose individual members have reached a particular level of learning. This practice encourages students to help each other learn.

Roger and David Johnson (Strother 1990) contend that what cooperative learning groups need is face-to-face, on task, verbal interaction, with everyone in the group contributing, listening, elaborating, arguing, and resolving. Elizabeth Cohen (Strother 1990) states that to facilitate cooperative groups, the teacher must address the different learning modalities of the students by using a variety of media that will tap multiple abilities. In this way, every student is able to contribute. Cohen (Strother 1990) also points out that it is the teacher's responsibility to "wrap up" the entire process by pointing out key issues and helping the students process what they have learned.

Another important question to answer is; "what makes cooperative learning fail?" Cohen (Strothers 1990) says that attempting to use direct supervision and direct instruction while groups are in progress and/or hovering over students to get them through their tasks are all detrimental to group learning. She also admonishes teachers to not allow one or two students to dominate the group. Furthermore, she states it is important to keep groups small (under five students) and to develop tasks that do not have single right answers, but instead allow for some uncertainty and foster discussion.

D. Johnson (Curwin and Mendler, 1988) supports cooperative group learning as a legitimate way of increasing motivation and achievement. Slavin (Curwin and Mendler, 1988) suggests that cooperative group learning enhances self-esteem.

Are there other benefits to using cooperative group learning? Curwin and Mendler (1988) contend that group learning needs to be product oriented so as to keep the students focused. The product can be in the form of something made, a decision, or a performance. Product oriented group learning allows for a sense of accomplishment and a means to self-evaluate. Curwin and Mendler also see the need for students to reflect on the group processes. Discussions would enhance communication and cooperation.

The next question is concerning grades and inappropriate classroom behavior. Do students' grades have an effect on their

behavior? According to Curwin and Mendler (1988), students' grades have a lot to do with their behavior in the classroom.

"How can inappropriate behavior due to low grades be prevented?" Curwin and Mendler suggest allowing the student to work on his ability level and receive grades that reflect his effort and achievement at that level. Regularly giving the student positive feed-back is important also.

Another suggestion is performance contracting where the student and teacher mutually agree upon what is to be learned. Regular monitoring of the contract and flexibility are important for successful performance contracting. This will increase the student's probability of success in the classroom (Curwin and Mendler, 1988).

Other suggestions Curwin and Mendler (1988) make to help ensure the students' probability of success include allowing the students to write test questions for themselves or others and test or evaluate themselves or other classmates. The key is to allow the students as much responsibility in the evaluation process as possible. This, along with allowing for each student's success, will work to minimize classroom behavior problems (Curwin and Mendler, 1988).

Glasser (1993) advocates a system of student self-evaluation that does not depend on grades. According to Glasser's evaluation plan, every student can be successful. Glasser also believes in student self-evaluation as a way toward

achieving quality work. Students can be taught to judge their work for quality. If they find that quality to be low, their basic need for power will drive them to improve upon their short-comings.

Glasser (1993) believes today's students are more concerned with "passing the test" than they are with learning. Good students and poor students both focus on "the grade they got on the test." They have little regard for what they learned and are not focused on doing quality work. Glasser believes that a system of "concurrent evaluation" will serve to focus students attentions on the quality of their work. It is a system of self-evaluation.

Concurrent evaluation is the practice of evaluating their (their student's) own work as they do it. Glasser uses the acronym SESIR to explain concurrent evaluation.

S - SHOW the teacher or asisstant that they (the students) have done the work.

E - EXPLAIN how they did the work

S - SELF-EVALUATE to see if the work can be improved.

I - IMPROVE upon their work by continuing to work on it.

R - REPEAT the self-evaluation and improvement process, with or without help, until they (the students) feel they have achieved quality work.

This process can be used with or without grades: "B" for competent work, "A" for quality work. It can be used in all grades, elementary and secondary, and with all levels of

students. Students can work on their own level and at their own pace. Students can be part of a group including high, medium, and low students, who will ask each other for help. This system of learning, improving, and evaluating does not require tests or homework for the teacher to be able to evaluate the students' progress. (Glasser, 1993)

This system of concurrent evaluation works very well in all courses, ranging from academics through the arts and technologies. Deming (Glasser 1993) points out that in the real world of work, workers are expected to show, explain, evaluate, and constantly improve what they do. Therefore, Glasser contends that this same system should be used in schools.

Improved Communication

Good communication between the teacher and students is vital in maintaining a positive classroom climate. As identified in Chapter two, one possible cause of inappropriate behavior in the classroom was stressful communication. A classroom with limited English students can be experiencing stressful communication beyond the ordinary realm of communication difficulties. The literature search identified several ways communication can be enhanced, not only with limited English students, but with students in general.

One way to enhance communication is to allow students to help establish classroom rules and consequences for breaking

them. During this process students have a chance to become aware of how their peers feel about specific behaviors. (Burke, 1992). Furthermore, Burke suggests that the students should also be allowed to define roles needed during group activities and the duties of each role. Not only does this process serve to enhance communication, but Kohn (1991) contends that it facilitates decision-making skills because students are involved in collaborative planning and mutual problem solving.

Kohn (1991) contends that students need to understand the rationale behind classroom rules; hence they will be more likely to follow them. When students understand how their behavior affects others, they are more likely to develop a caring attitude. Kohn believes this is a key point, students who view themselves as caring individuals will act responsibly.

What else can be done to enhance communication in the classroom? With cooperative learning becoming more popular in classrooms, what can a teacher do when students disagree with each other? Burke (1992) suggests teaching students conflict resolution skills. This involves teaching students to listen to other people's ideas, respect their opinions, and disagree with the idea, not the person. Furthermore, students should be encouraged to explore different points of view and learn to negotiate or compromise with others.

Curwin and Mendler (1988) suggest teachers use "I-statements" to enhance communication with students.

An I-statement describes the student behavior and tells how the teacher feels about the behavior and why he/she feels that way. Example: "I like/dislike the way you did .....because ...." I-statements give the student meaningful feed-back. Curwin and Mendler contend that I-statements can be used in the classroom to improve student motivation and performance. They are an effective alternative to praise. I-statements are also an effective way to communicate with students in a non-critical way.

What can be done to improve the communication abilities of the limited English students? Improved communication abilities will enhance learning, as well as help create a positive classroom climate. According to Cohen (Burke, 1992) cooperative learning benefits the limitd English speaking students in that it gives them the opportunity for more communication practice. Bi-lingual students in the group with limited English speakers can serve as translators. Group work that incorporates active involvement, pictures, and manipulatives helps the limited speaker to improve his English skills.

Limited English students are often several years behind their peers in their academic abilities. Group work can also address the problem of helping them catch up on basic skills while remaining in the mainstream class and continuing to work on higher order thinking projects. English speaking or bi-lingual students in the group are able to help the limited

English speaker by reading aloud, paraphrasing, summarizing, and reviewing important terms and materials (Burke, 1992).

According to Burke (1992), the teacher can further help the limited English students in group learning situations by assigning them easier group roles, providing them with reading materials or tapes in their own language, and by making bi-lingual posters with rules, consequences, procedures, social skills, etc.

Action Plan

What follows is an action plan that incorporates cooperative group learning and peer evaluation. This plan will attempt to motivate students, reduce off-task behaviors, and allow for better achievement levels. This plan will also attempt to incorporate the suggestions found in the literature with the workings of the industrial arts class.

Project Objectives

As a result of cooperative group learning, during the period of November 28, 1994 to January 13, 1995, the targeted industrial arts high school students will decrease their inappropriate classroom behavior and increase their successful class participation, as measured by teacher observation and increased levels of performance.

As a result of peer evaluation, during the period of November 28, 1994 to January 13, 1995, the targeted industrial

arts high school students will decrease their inappropriate classroom behavior and increase their successful class participation, as measured by teacher observation and increased levels of performance.

Process Statements

In order to successfully incorporate cooperative group learning, the following procedures are proposed:

1. the researcher will develop step-by-step, diagrammed engine parts assembly instruction sheets for use during cooperative group learning (Appendix J through Q)
2. the researcher will give prior guided practice to the necessary cooperative group members to facilitate the proper use of the engine parts assembly instruction sheets
3. the researcher will instruct the students as to proper group interactions and procedures for the cooperative learning groups.

In order to successfully incorporate a peer evaluation system, the following procedures are proposed:

1. the researcher will develop a form for use by the students that will enable them to properly award points to appropriate students during cooperative group learning (Appendix R,S)
2. the researcher will instruct the students as to the proper procedure for awarding points to the appropriate group members during cooperative group learning

3. the researcher will instruct the students as to the proper procedure for writing quiz questions pertaining to the engine parts assembly during cooperative group learning (Appendix U,V)
4. the researcher will conduct a whole class discussion of the quiz questions written by each cooperative learning group
5. the researcher will use the cooperative group quiz questions to prepare a written quiz for the class.

Action Plan Outline

1. To be implemented from November 28, 1994 to January 13, 1995.
2. Five cooperative learning groups consisting of four students each.
3. Cooperative learning groups will assemble an engine part, rate their group members using a point system, write a quiz question pertaining to their engine part, participate in a whole class discussion of the quiz questions generated by the groups, and take a written quiz generated from these questions.
4. Each cooperative learning group will meet two or more times as necessary to complete the assigned activity.

Cooperative Learning Groups and Peer Evaluation

The researcher will develop cooperative learning groups with two students assuming the role of teacher and two students assuming the role of students. The "two teachers" are

responsible for explaining to the two students how to assemble a particular engine part and explain its purpose and function. The "two teachers" will use pre-made, researcher developed, detailed, step-by-step, diagrammed engine parts assembly sheets. (Appendix J through N) The "two teachers" will receive prior guided practice from the researcher to facilitate the proper use of the engine parts assembly instruction sheets. The researcher will also instruct the cooperative group members as to proper group procedures and interactions while working, as well as to the proper procedure for awarding points and writing quiz questions. This instruction will be just prior to cooperative group learning. During the cooperative group learning the "two students" will receive verbal instructions from the "two teachers" explaining how to assemble the engine parts assembly properly while using the detailed instruction sheets provided. The "two students" will then assemble the engine parts assembly properly while using the detailed instruction sheets and collaborating among themselves and their "two teachers."

The "two teachers" award points to the "two students" for cooperative, productive work efffort. The "two students" award points to the "two teachers" for clarity of presentation and helpfulness. (Appendix R,S) These points earned by all students are kept confidential; only point totals are given to each individual student at regular intervals. These points are calculated into each individual student's grade.

Each cooperative learning group is responsible for writing one "quiz question" that applies to the material presented

during the cooperative group activity. (Appendix U) At the end of the cooperative group activity, the quiz questions generated by the group participants will be discussed by the whole class. Finally, to complete the lesson, the students will be given a written quiz containing the questions that were generated by the cooperative groups.

Method of Assessment

The effect of the Action Plan on decreasing inappropriate classroom behavior and increasing student performance levels will be measured by teacher observation and student performance (grades). The post action plan data collection procedure and forms will be the ones used to initially collect data to document the problem. (Appendix W1,W2,W3)

Chapter 4

THE INTERVENTION

RESULTS AND RECOMMENDATIONS

This chapter will attempt to describe and analyze the intervention, compare the post action plan data to the data initially collected, and make recommendations for future intervention.

Description and Analysis of the Intervention

The intervention chosen was intended to satisfy the project objectives which were to decrease inappropriate classroom behavior while increasing successful class participation and performance. The two strategies used to meet the project objectives included cooperative group learning and peer evaluation. These two intervention strategies formed the basis of the action plan.

What follows is a brief explanation of the action plan, along with its purpose: cooperative group learning involved a grouping of four students, two of which performed "teaching duties" and two assumed the role of "students." The purpose of the group learning was to cooperatively learn how to properly assemble an engine part. (Appendix J through N) Peer evaluation involved a "point system." Points were awarded by all cooperative group participants with the two "teachers" judging the "students" work effort and the two "students" judging the

"teachers" ability to instruct. (Appendix R,S) Furthermore, each cooperative group of four students was required to write one quiz question (pertaining to the material learned)for class discussion and inclusion on a written class quiz. (Appendix U)

The purpose of the cooperative group learning was to enhance learning by addressing the needs of the limited English students, as well as to increase motivation and decrease off-task behavior. The peer evaluation "point system" for good effort on everyone's part hopefully would serve to keep students on task. The purpose of requiring each group to write a quiz question was to not only "get all questions answered", but to increase group interaction as well. It was hoped that this activity would enhance discussion of the engine part among the group members, resulting in increased learning by all members. It was also hoped that the small group discussions would act as a "warm-up activity" for the whole class discussion.

As the action plan was put into effect, some deviations became necessary. First of all, while half of the students (who were to be the teachers) received "teaching instructions" from the researcher, the other half of the students (who were to be the students) were assigned seat work. These students became distracted and disenchanted at being left out of the "teacher group." Therefore, it became necessary to modify the action plan.

The modified action plan is as follows: The cooperative learning groups were changed to include only two students, who were equal partners. Each group of two students was given a diagrammed engine part assembly instruction sheet. The two students collaborated and worked together to assemble one engine part. (Appendix O,P,Q) Upon completion of the engine part

assembly work, each group of two students rated themselves as to their work performance, using a pre-determined scale of one to five points, provided by the researcher. (Appendix T) Only one score was rendered. The two students agreed upon this score together. This score was added to each student's accumulated grade points. What remained unchanged from the original action plan was the one quiz question generated per group of students, although the group now consisted of two students instead of four students.

The intent of the modified action plan remained the same as the original action plan, that was to motivate students, reduce off-task behavior, and address the needs of the limited English students. The evaluation system changed from peer evaluation (students rating each other) to self-evaluation (students rating themselves). The purpose of self-scoring, with only one score rendered for each group of two students, was to enhance accountability not only to themselves but also to their partner. Self-evaluation was intended to enhance self-reflection.

While the cooperative groups were involved with their engine parts assembly, the teacher/researcher was available for questions and to provide demonstrations. Also, a computer program was readily available for any students who wanted to verify their knowledge of ruler and micrometer reading.

Presentation and Analysis of the Data

The initial data (Appendix A through I) collected to document the problem was compared to the data collected following implementation of the action plan (Appendix X,Y,Z) and the modified action plan. The initial data was collected over a three week period in October 1994. The original action plan was incorporated only once with the cooperative group learning activity concluding

at the end of three days (November 28-30, 1994) The modified plan was commenced and continued over a period of four weeks (December 1994 and January 1995). At this time, this one semester class ended and data collection ceased.

How well did the action plan and modified plan reduce inappropriate classroom behavior and increase student performance?

Inappropriate classroom behavior in the form of poor work habits was documented. Poor work habits consist of off-task behavior, low productivity, not working independently, and careless work behaviors. The data shows a decrease in the number of poor work habits recorded after the action plan was implemented and a further decrease after implementation of the modified plan. Here is a summary of the data collected:

Table 1

Inappropriate Classroom Behaviors

Comparison of Poor Work Habits

Week of	Initial Data	Action Plan Data	Modified Plan Data
Oct. 10, 1994	12.75		
Oct. 17, 1994	13.4		
Oct. 24, 1994	11.4		
Nov. 28, 1994		9.6	
Dec. 5, 1994			9.2
Dec. 12, 1994			8.9
Jan. 2, 1995			7.9
Jan. 9, 1995			8.2

Note: This was a one semester class. Data collection ended at the end of the semester on January 13, 1995. Figures represent the average number of daily incidents per week. This figure was calculated by taking the total number of poor work habits in all categories for the week and dividing it by the number of days in the week. See Appendices A,B,C, and X for more detailed information by category.

The data for poor work habits shows a 23.2 percent reduction in poor work habits after implementing the action plan and an average 32 percent reduction in poor work habits after implementing the modified plan. The average number of daily incidents of poor work habits was 12.5 before implementing the action plan. This daily average dropped to 9.6 upon implementation of the action plan and further dropped to an average of 8.5 incidents upon implementation of the modified plan. The average number of daily incidents were calculated by totaling the average number of daily incidents per week for the entire implementation period and dividing that number by the total of weeks implemented.

Inappropriate classroom behavior in the form of disruptive behaviors was documented. Disruptive behaviors consist of general disruption of the learning environment, verbal or physical abuse, and excessive tardiness or truancy. The data shows a decrease in the number of disruptive behaviors recorded after the action plan was implemented and a further decrease after implementation of the modified plan. Here is a summary of the data collected:

Table 2

Inappropriate Classroom Behaviors

Comparison of Disruptive Behaviors

Week of	Initial Data	Action Plan Data	Modified Plan Data
Oct. 10, 1994	4.5		
Oct. 17, 1994	5.8		
Oct. 24, 1994	5.2		
Nov. 28, 1994		3.6	

Table 2 (continued)

Week of	Initial Data	Action Plan Data	Modified Plan Data
Dec. 5, 1994			3.0
Dec. 12, 1994			3.2
Jan. 2, 1995			2.5
Jan. 9, 1995			2.6

Note: This was a one semester class. Data collection stopped at the end of the semester on January 13, 1995. Figures represent the average number of daily incidents per week. This figure was calculated by taking the total number of disruptive behaviors in all categories for the week and dividing it by the number of days in the week. See Appendices D,E,F. and Y for more detailed information by category.

The data for disruptive behaviors shows a 30.3 percent reduction in disruptive behaviors after implementing the action plan and an average 45.8 percent reduction in disruptive behaviors after implementing the modified plan. The average number of daily incidents of disruptive behaviors was 5.16 before implementing the action plan. This daily average dropped to 3.6 upon implementation of the action plan and further dropped to an average of 2.8 upon implementation of the modified plan. The average number of daily incidents were calculated by totaling the average number of daily incidents per week for the entire implementation period and dividing that number by the total of weeks implemented.

Student performance was also documented. Student performance was measured by totaling points for oral class participation, hands-on participation, reference notebooks, and quiz scores. The data shows an increase in student grades after the action plan was implemented and a further increase after implementation of the modified plan.

Here is a summary of the data collected:

Table 3

Comparison of Student Performance

	Initial Data (Oct. 10-28, 1994)	Action Plan Data (Nov. 28-30, 1994)	Modified Plan Data (Dec. 5 - Jan. 13, 1995)
Student 1	46.5%	65%	71%
Student 2	57.5%	67.5%	69.2%
Student 3	44%	62.5%	67.5%
Student 4	51.5%	70%	73.5%
Student 5	48.2%	62.5%	70%
Student 6	52.5%	67.5%	71.5%
Student 7	49%	70%	72.2%
Student 8	46.5%	65%	66.2%

Note: The figures above are based on student averages.
Percentage figures represent the following grades:
90-100% A, 80-90% B, 70-80% C, 60-70% D,
Under 60% - failing

Initial data percentages range from 44 percent to 57.5 percent. All are failing grades. The student percentages shown upon implementation of the action plan fell within the range of 62.5 percent to 70 percent. After implementation of the modified action plan, the student percentages fell in the range of 66.2 percent to 73.5 percent.

The initial data collected for three weeks shows the eight students performing at an average of 49.4 percent in October 1994.

The data collected after implementing the action plan for one week in November 1994 shows the eight students performing at an average of 66.2 percent. After the modified plan was instituted, the eight students showed an average performance score of 70.1 percent in December 1994 and January 1995. The modified action plan was implemented for four weeks.

The teacher/researcher promoted a cooperative atmosphere by being readily available to answer any questions and give demonstrations upon request. The teacher/researcher maintained a flexible approach to student grouping, changing pairs as necessary to promote peer tutoring where needed. Furthermore, the students were encouraged to "give themselves a round of applause" in a manner of speaking, by scoring themselves generously for work effort and cooperation as reflected in their point totals (Appendix R,S,T evaluation forms). The student point totals were added to their individual grades.

Conclusions and Recommendations

The data collected reflects the actions and performance of eight students in the targeted class. The action plan and modified action plan did decrease poor work habits by 23.2 percent and 32 percent respectively. The action plan and modified action plan also decreased disruptive behaviors by 30.3 percent and 45.8 percent respectively. After implementation of the action plan, student performance increased from 49.4 percent (average grade percentage) to 66.2 percent (average grade percentage). After implementation of the modified action plan, student performance increased to

70.1 percent (average grade percentage). This reflects a decrease in inappropriate classroom behaviors and an increase in student performance.

Cooperative group learning and peer and self-evaluation formed the basis of the action plan. These strategies were not solely responsible for the decrease in inappropriate classroom behaviors and the increase in student performance. Other factors influencing behavior and performance were an increase in student interest, self-confidence, and maturity. Off-task behaviors decreased and student motivation and performance increased. Additional cooperative group learning material was generated. This involves tool identification, engine part identification, and an organizer box for the proper sequencing of engine assembly (Appendix a-j). This material was used successfully in cooperative groups, although no official data was collected. This material did serve to generate student interest, cooperation, and learning.

The modified action plan incorporated two students as equal partners as opposed to four students with two "teachers" and two "students" in the original plan. This grouping of four students was only done for one engine part assembly activity because too much student confusion concerning their roles was generated. Guided practice was given to the two students acting as "teachers." This was accomplished by taking these students aside as a group to explain and demonstrate the proper technique for the engine parts assembly. They were shown how to use the engine parts instruction sheets as a guide to help them show the other students how to assemble the engine part. Then the two student "teachers" returned

to the other two students in their group and proceeded to explain to them how to assemble the engine parts. Then began the confusion as to their roles. The two student "teachers" wanted to "get their hands on the engine" instead of just instructing. The two "students" became frustrated at having "to take orders" from the two acting teachers. Hence, at the end of this engine parts assembly activity, the format was changed to two students acting as equal partners. The reduction to two students per group yielded better results in the decrease of inappropriate classroom behaviors and increase in student performance.

A grouping of two students as equal partners caused less confusion. The students worked together more quietly and remained on task more often than the four student groups. A different engine part assembly task (lawn mower engine) was given the students weekly during the implementation of the action plan and modified plan (five weeks total). The entire class (20 students) participated in the cooperative learning activity. The eight targeted students were divided among eight of the ten groups formed. This would allow the targeted students to have an academically stronger partner. Care was taken to pair primary English students with the limited English students, thereby allowing a greater chance for success as well as allowing for communication practice. By having one strong academic student with a weaker academic student, peer tutoring was in place.

Here is the breakdown of the student groups:

Table 4

Student Pairs in Cooperative Learning

(20 students total)

Group 1 - targeted limited English student and strong student

Group 2 - targeted limited English student and strong student

Group 3 - targeted limited English student and strong student

Group 4 - targeted limited English student and strong student

Group 5 - targeted limited English student and strong student

Group 6 - targeted limited English student and strong student

Group 7 - targeted limited English student and strong minority student

Group 8 - targeted limited English student and average student

Group 9 - average student and average student

Group 10 - average student and average student

The targeted students were the eight identified students whose classroom behavior and performance were below the norm. The targeted students were all limited English students and all were minority students. The targeted students were paired with strong non-minority students in all but two cases, where it was necessary to pair a targeted student with a strong minority student and another targeted student with an average student.

Informal (not documented) teacher/researcher observation showed that the entire class benefited from cooperative group learning. Learning was enhanced as reflected in increased hands-on performance and quiz scores. The eight targeted students showed significant increases in performance (Table 3) and reductions in inappropriate work habits (Table 1) and disruptive behaviors (Table 2).

The modified action plan also used self-evaluation as opposed to peer evaluation in the original action plan. Peer evaluation did not work well as informally observed by the teacher/researcher. Friends would give higher points to their friends. Scoring did not accurately reflect the degree of work effort and cooperation (Appendix R,S). Self-evaluation proved to yield scores that more closely resembled the degree of work effort and cooperation (Appendix T). Self-evaluation yielded better results in the decrease of inappropriate classroom behaviors and the increase in student performance. Self-evaluation was useful as a tool for self-reflection.

Overall, the classroom climate became more supportive, due to increased cooperation among the students. The teacher/researcher's overall teaching method changed from a directive approach to incorporate cooperative learning wherever possible. Lecture and demonstration by the teacher/researcher were replaced with cooperative learning activities, allowing for more student hands-on time. This was favorably accepted by the entire class. Cooperative group activities were expanded to include not only engine parts assembly, but tool and engine part identification as well (Appendix c through j). Furthermore, the teacher/researcher developed an "organizer box" and corresponding sequenced instruction sheet for engine assembly and disassembly (Appendix a,b). Although there is no official documentation of success for the organizer box activity and identification activities, all were well received by the students and generated favorable comments.

Cooperative learning provided for a safe, supportive environment. Student groups were not in competition with each other. All the students were allowed to work at their own pace and were not chastised for any mistakes made. The teacher/researcher provided the necessary feed-back to correct the mistakes. Each student group was appropriately challenged when ready and proceeded without the fear of being penalized for mistakes.

Student generated quiz questions resulted in increased interest and performance. While the students were working cooperatively on the engine parts assembly, they were instructed to select one student to act as a recorder of any questions that arose. At the end of the group activity, the students were instructed to choose one of the questions, write it down, and pass it up to the teacher/researcher. When all student groups had turned in their questions, the teacher/researcher read the questions aloud, one by one, and opened up the discussion of each question, asking for student volunteers to answer the question. Each question was discussed and answered in this way. If the answer was not apparent to the students, the teacher/researcher would give an explanation until all the students knew and understood the answer. The next step involved a written quiz containing only these exact questions that had just been discussed. Therefore, the class discussion served as an oral study session for the quiz. Furthermore, the students now had "their questions" answered. This activity generated interest, increased student motivation, and gave the students practice in communication skills. Oral class participation

increased among the entire class. Also, there was an overall increase in quiz scores.

In regards to further research, the teacher/researcher would suggest more research on student attitudes, motivation, and involvement. The question could be; "how can we involve students in planning the classroom structure that will meet their learning needs and encourage them to pursue further studies?"

REFERENCES CITED

Ban, Jon R. (1994). A lesson plan for dealing with school discipline. The Clearing House. 67. 251-261.

Benard, Bonnie. (1992). How Schools Convey High Expectations For Kids. Western Center News. 5. 17-19

Bishop, John H. (1992). Why U.S. Students Need Incentives To Learn. Educational Leadership. March. 15-19

Burke, Kay. (1992). What To Do With The Kid Who Palatine, Il. IRI/Skylight.

Clifford, Margaret M. (1990). Students Need Challenge Not Easy Success. Educational Leadership. September. 22-25.

Crouse, W.H. and Anglin, D. L. (1980). Small Engine Mechanics. New York: McGraw-Hill.

Curwin, R. L. & Mendler, A. N. (1988). Discipline With Dignity. Alexandria, VA. Association for Supervision and Curriculum Development.

Glasser, William M.D., (1990). The Quality School - Managing Students Without Coercion. New York: Harper & Row.

Glasser, William M.D., (1993). The Quality School Teacher: New York: Harper & Row.

Harding, Kelley (1990). What's New And Old In Technology and Education. Industrial Education Magazine: 76. 3.

Kohn, Alfie (1991). Caring Kids The Role Of Schools. Phi Delta Kappan. March. 496-506

Kohn, Alfie (1986). No Contest - The Case Against Competition. Boston: Houghton Mifflin Co.

National Reading Association. (1992). Kids Come In All Languages: Reading Instruction For ESL Students (Midwest MRC-SA7) Delaware: Kwint, Judith A.

North Central Association. (1994). School and Community: Elgin, Il. U-46 - Printing Office

Novelli, Joan & Peterson, Reece. (1993). Better Behavior For Better Learning. Instructor. July 74-78

Quotas in school discipline. (1994). National Review. 46. 22.

Reinert, Henry R. (1980). Children In Conflict: St. Louis: C. V. Mosby.

School District U-46. (1994). 1994 School Report Card: Elgin, Il. U-46 - Printing Office

Speirs, Verne L. (1989). Using The Law To Improve School Order And Safety. Office of Juvenile Justice And Delinquency Prevention. 4. 9-11.

Stewart, Darlene L. (1993). Creating The Teachable Moment: Bradenton, FL. Human Services Institute.

Stiles, John. (1992). The Unstudious American: Who's At Fault? Educational Leadership: May 61-63.

Strother, Deborah B. (1990). Cooperative Learning: Fad Or Foundation For Learning. Phi Delta Kappan: October 158-162

Thompson, George. (1994). Discipline And The High School Teacher The Clearing House. May 261-265

Violence - Related Attitudes and behaviors of High School Students. (1992). Journal Of The American Medical Association. 270. 2032-2033.

Wasicsko, Mark M. & Ross, Steven M. (1994). How To Create Discipline Problems. The Clearing House. May 248-251.

APPENDICES

APPENDIX A

Initial Data Collection
(October 10-28, 1994)

Inappropriate Classroom Behaviors
Work Habits
(Week of October 10-14)

Teacher/Researcher Observation:

	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY
Off-Task		2-3-4 7-8 (5)	6-5-1-3 (4)	8-2-6-4 (4)	7-4-3-1 6-8 (6)
Low Productivity		5-3-7 (3)	1-6 (2)	8-2-4 (3)	4-3-7-6 (4)
Not Working Independently		4-7-5-2 (4)	1-6-3 (3)	4-6-2-8 (4)	6-7-4-3 1 (5)
Careless Work Behaviors		3 (1)	5 (1)	6 (1)	6 (1)
Totals		13	10	12	16

Totals by category:

Off-Task	19	Daily average	4.75
Low Productivity	12	Daily average	3
Not Working Independently	16	Daily average	4
Careless Working Behaviors	4	Daily average	1

Notes: Numbers in chart are coded to student names.
Example: 1-3-5 Mary-Joe-Bob
Students are coded 1-8

Numbers in parentheses indicate the number of incidents recorded.
Example: (3) is 3 incidents.

Total weekly incidents: 51

Average number of daily incidents 12.75

APPENDIX B

Initial Data Collection
(October 10-28, 1994)

Inappropriate Classroom Behaviors
Work Habits
(Week of October 17-21)

Teacher/Researcher Observation:

	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY
Off-Task	7-8-1-3 6-5 (6)	3-5-1-2 (4)	2-4-3-1-7 (5)	4-7-8-5 (4)	3-7-5-6 1-2-8 (7)
Low Productivity	1-7-3 (3)	3-5 (2)	7-1 (2)	5-8-4 (3)	8-7-1-6 (4)
Not Working Independently	3-1-8-6 (4)	5-1 (2)	1-7-3 (3)	4-8-5-7 1-3 (6)	1-6-8-7 5 (5
Careless Work Behaviors	3 (1)	3 (1)	4-2 (2)	5 (1)	5-3 (2)
Totals	14	9	12	14	18

Totals by category:

Off-Task	26	Daily average	5.2
Low Productivity	14	Daily average	2.8
Not Working Independently	20	Daily average	4.
Careless Working Behaviors	7	Daily average	1.4

Notes: Numbers in chart are coded to student names.
Example: 1-3-5 Mary-Joe-Bob
Students are coded 1-8

Numbers in parentheses indicate the number of incidents recorded.
Example: (3) is 3 incidents.

Total weekly incidents: 67

Average number of daily incidents: 13.4

APPENDIX C

Initial Data Collection
(October 10-28, 1994)

Inappropriate Classroom Behaviors
Work Habits
(Week of October 24-28)

Teacher/Researcher Observation:

	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY
Off-Task	5-3-1 (3)	3-2-8 (3)	8-1 (2)	4-3-2 (3)	8-1-5-4 (4)
Low Productivity	1-3 (2)	3-8 (2)	1-8-3 (3)	2-4-3 (3)	5-8-2-4 (4)
Not Working Independently	3-1-5-2 (4)	8-3-2-5 (4)	3-8-1-6-7 (5)	4-2-3-6 (4)	8-5-1-2 4 (5)
Careless Work Behaviors	5 (1)	3 (1)	6-7 (2)	6 (1)	7 (1)
Totals	10	10	12	11	14

Totals by category:

Off-Task	15	Daily average	3.0
Low Productivity	14	Daily average	2.8
Not Working Independently	22	Daily average	4.4
Careless Working Behaviors	6	Daily average	1.2

Notes: Numbers in chart are coded to student names.
Example: 1-3-5 Mary-Joe-Bob
Students are coded 1-8

Numbers in parentheses indicate the number of incidents recorded.
Example: (3) is 3 incidents.

Total weekly incidents: 57

Average number of daily incidents: 11.4

APPENDIX D

INITIAL DATA COLLECTION
(OCTOBER 10-28, 1994)

INAPPROPRIATE CLASSROOM BEHAVIORS
Disruptive Behaviors
(Week of October 10-14)

Teacher/Researcher Observation:

	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY
General Disruption of the Class		2-3-5 (3)	3-6 (2)	6-2 (2)	1-3-6-4 (4)
Verbal or Physical Abuse		3 (1)	3 (1)	6 (1)	3-6 (2)
Excessive Tardiness or Truancy		3 (1)	0 (0)	0 (0)	6 (1)
Totals		5	3	3	7

Totals by category:

General Disruption of the Class: 11 Daily average 2.75

Verbal or Physical Abuse: 5 Daily average 1.25

Excessive Tardiness or Truancy: 2 Daily average 0.5

Notes: Numbers in chart are coded to student names.
Example: 1-3-5 Mary-Joe-Bob
Students are coded 1-8

Numbers in parentheses indicate the number of incidents recorded.
Example: (3) is 3 incidents.

Total Weekly incidents: 18

Average number of daily incidents: 4.5

APPENDIX E

INITIAL DATA COLLECTION
(OCTOBER 10-28, 1994)

INAPPROPRIATE CLASSROOM BEHAVIORS
Disruptive Behaviors
(Week of October 17-21)

Teacher/Researcher Observation:

	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY
General Disruption of the Class	5-6-3-1 (4)	2-1-5 (3)	7-3-4 (3)	8-4-7-5 (4)	1-3-6-5 (4)
Verbal or Physical Abuse	1-3 (2)	1 (1)	3 (1)	5 (1)	3-6 (2)
Excessive Tardiness or Truancy	3 (1)	1 (1)	0 (0)	0 (0)	1-5 (2)
Totals	7	5	4	5	8

Totals by category:

General Disruption of the Class: 18 Daily average 3.6

Verbal or Physical Abuse: 7 Daily average 1.4

Excessive Tardiness or Truancy: 4 Daily average 0.8

Notes: Numbers in chart are coded to student names.
Example: 1-3-5 Mary-Joe-Bob
Students are coded 1-8

Numbers in parentheses indicate the number of incidents recorded.
Example: (3) is 3 incidents.

Total Weekly incidents: 29

Average number of daily incidents: 5.8

APPENDIX F

INITIAL DATA COLLECTION
(OCTOBER 10-28, 1994)

INAPPROPRIATE CLASSROOM BEHAVIORS
- Disruptive Behaviors
(Week of October 24-28)

Teacher/Researcher Observation:

	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY
General Disruption	3-1-5	3-2	1-8-3	6-3-4-2	5-1-4-8
of the Class	(3)	(2)	(3)	(4)	(4)
Verbal or Physical	1	2	3	6	5-1
Abuse	(1)	(1)	(1)	(1)	(2)
Excessive Tardiness	5	0	0	3-6	1
or Truancy	(1)	(0)	(0)	(2)	(1)
Totals	5	3	4	7	7

Totals by category:

General Disruption of the Class: 16 Daily average 3.2

Verbal or Physical Abuse: 6 Daily average 1.2

Excessive Tardiness or Truancy: 4 Daily average 0.8

Notes: Numbers in chart are coded to student names.
Example: 1-3-5 Mary-Joe-Bob
Students are coded 1-8

Numbers in parentheses indicate the number of incidents recorded.
Example: (3) is 3 incidents.

Total Weekly incidents: 26

Average number of daily incidents: 5.2

APPENDIX G

Initial Data Collection
(October 10-28, 1994)

Student Performance Points
(Week of October 10-14)

From the teacher/researcher grade book:

Students	1	2	3	4	5	6	7	8
Oral class participation	2	2	0	0	4	0	0	2
Hands-on participation	5	7	6	6	5	6	6	7
Reference notebooks	7	6	4	5	6	5	4	6
Quiz Score	6	6	5	5	6	5	6	5
Student totals	20	21	15	16	21	16	16	20
Percentage Grades	50%	52.5%	37.5%	40%	52.5%	40%	40%	50%

Notes: Maximum number of points awarded for each category is 10.

Perfect weekly score is 40 points.

Scores ranged from a low of 15 (37%) to a high of 21 (52%) for the above 8 students (all failing grades).

All grades 60% or higher are passing grades.

APPENDIX H

Initial Data Collection
(October 10-28, 1994)

Student Performance Point
(Week of October 17-21)

From the teacher/researcher grade book:

Students	1	2	3	4	5	6	7	8
Oral class participation	2	6	2	4	2	4	2	0
Hands-on participation	6	7	6	7	5	7	6	6
Reference notebooks	5	6	5	6	7	6	5	5
Quiz score	5	7	5	7	5	6	4	4
Student totals	18	26	18	24	19	23	17	15
Percentage grades	45%	65%	45%	60%	47.5%	57.5%	42.5%	37.5%

Notes: Maximum number of points awarded for each category is 10.

Perfect weekly score is 40 points.

Scores ranged from a low of 15 (37%) to a high of 26 (65%) for the above 8 students (2 passing grades).

All grades 60% or higher are passing grades.

APPENDIX I

Initial Data Collection
(October 10-28, 1994)

Student Performance Points
(Week of October 24-28)

From the teacher/researcher grade book:

Students:	1	2	3	4	5	6	7	8
Oral class participation	0	4	4	2	0	4	6	4
Hands-on participation	5	6	5	7	5	7	7	6
Reference notebooks	6	5	5	7	6	6	6	5
Quiz score	7	7	6	6	7	7	7	6
Student totals	18	22	20	22	18	24	26	21
Percentage grades	45%	55%	50%	55%	45%	60%	65%	52.5%

Notes: Maximum number of points awarded for each category is 10.

Perfect weekly score is 40 points.

Scores ranged from a low of 18 (45%) to a high of 26 (65%) for the above 8 students (2 passing grades).

All grades 60% or higher are passing grades.

APPENDIX J

Engine Parts Assembly - Student Sheet

FUNCTION OF THE PISTON ASSEMBLY

PISTON	Round object that is closed at one end and connected to the crankshaft by the connecting rod. The force of the explosion in the cylinder is exerted against the closed end of the piston, causing the connecting rod to move the crankshaft.
PISTON RING	An expanding ring placed in the grooves of the piston to provide a seal to prevent the passage of fluid or gas past the piston.
CONNECTING ROD	A rod that connects the piston to the crankshaft.
LOCK TABS	A tab to secure a bolt or nut.

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APPENDIX K

Engine Parts Assembly - Student Sheet

HOW TO ASSEMBLE THE PISTON ASSEMBLY

INSTRUCTION: Assemble in sequence, starting with number 1.

1. Coat all metal surfaces with oil before assembly.
2. Install one new retaining ring on one side of the piston boss.

   (CAUTION: Make sure the retaining ring is secured.)
3. Assemble the connecting rod to piston with wrist pin.
4. Install the other new retaining ring in the piston boss securely.
5. Install rings in correct order.

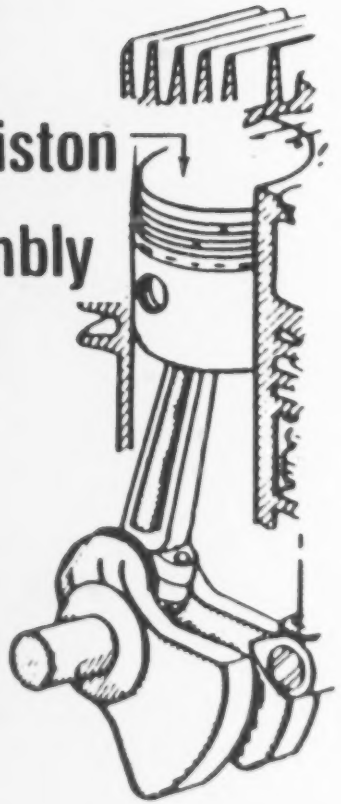
   A. First -- The oil control ring on the bottom groove of the piston.

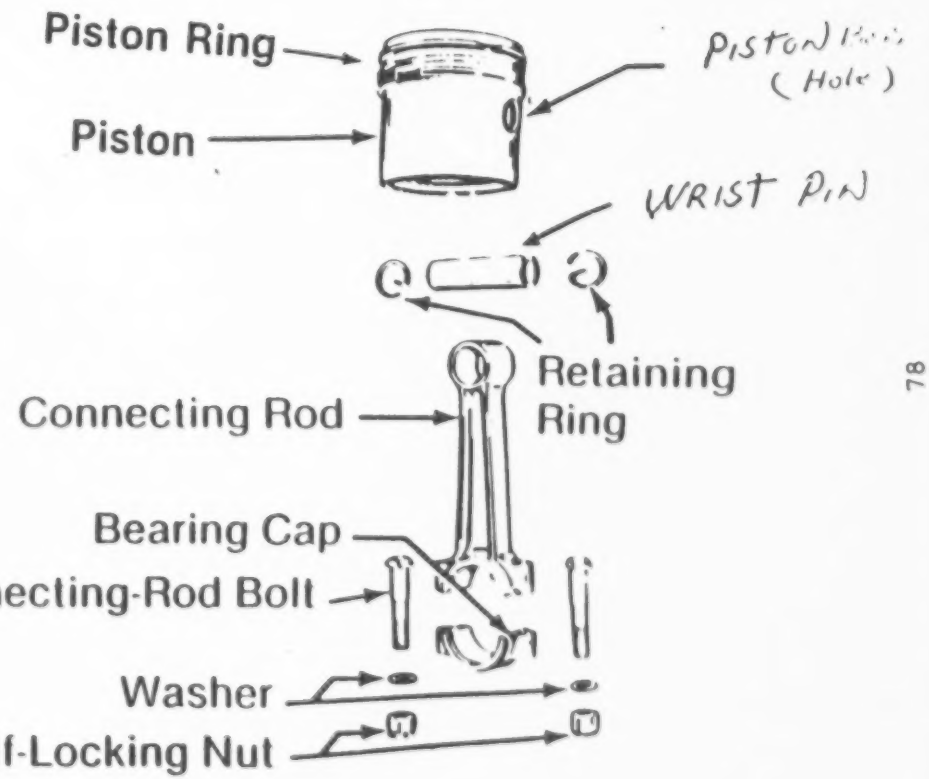
   B. Second -- The compression ring to the second groove on the piston.

   C. Third -- The other compression ring to the top groove of the piston.

   (CAUTION: Rotate ring gaps approximately 90 from each other.)
6. Install rod cap and lock tabs to the other end of connecting rod.

Connecting Rod Assembly

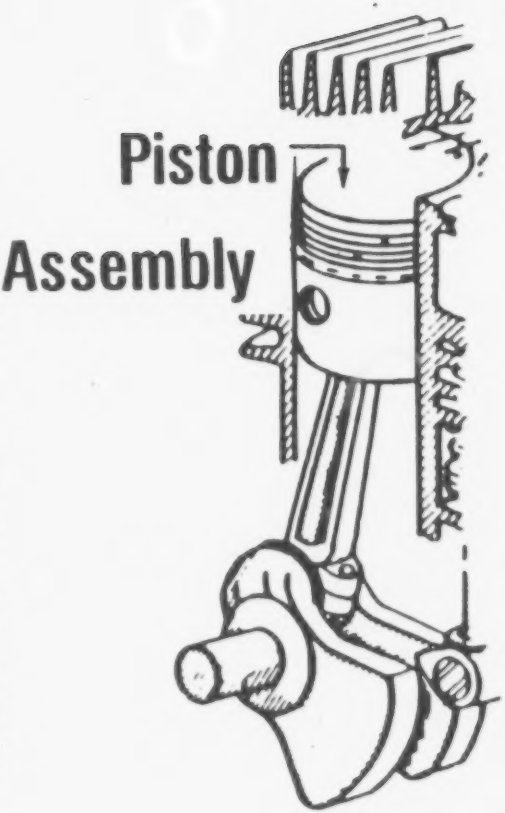




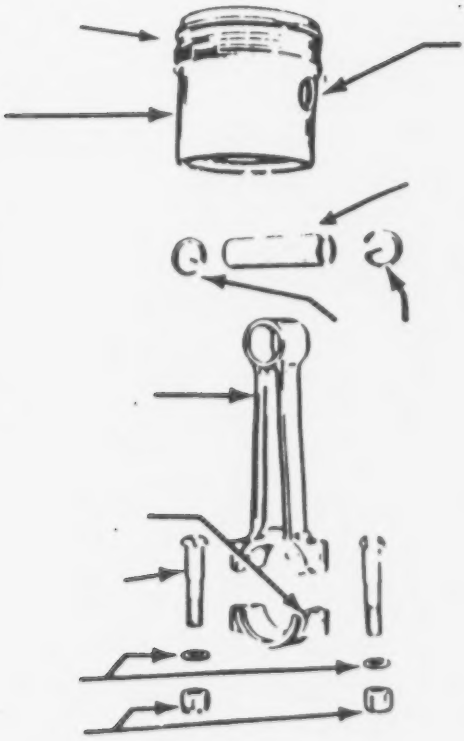
APPENDIX M

Engine Parts Assembly - Illustration

Connecting Rod Ass



d Assembly

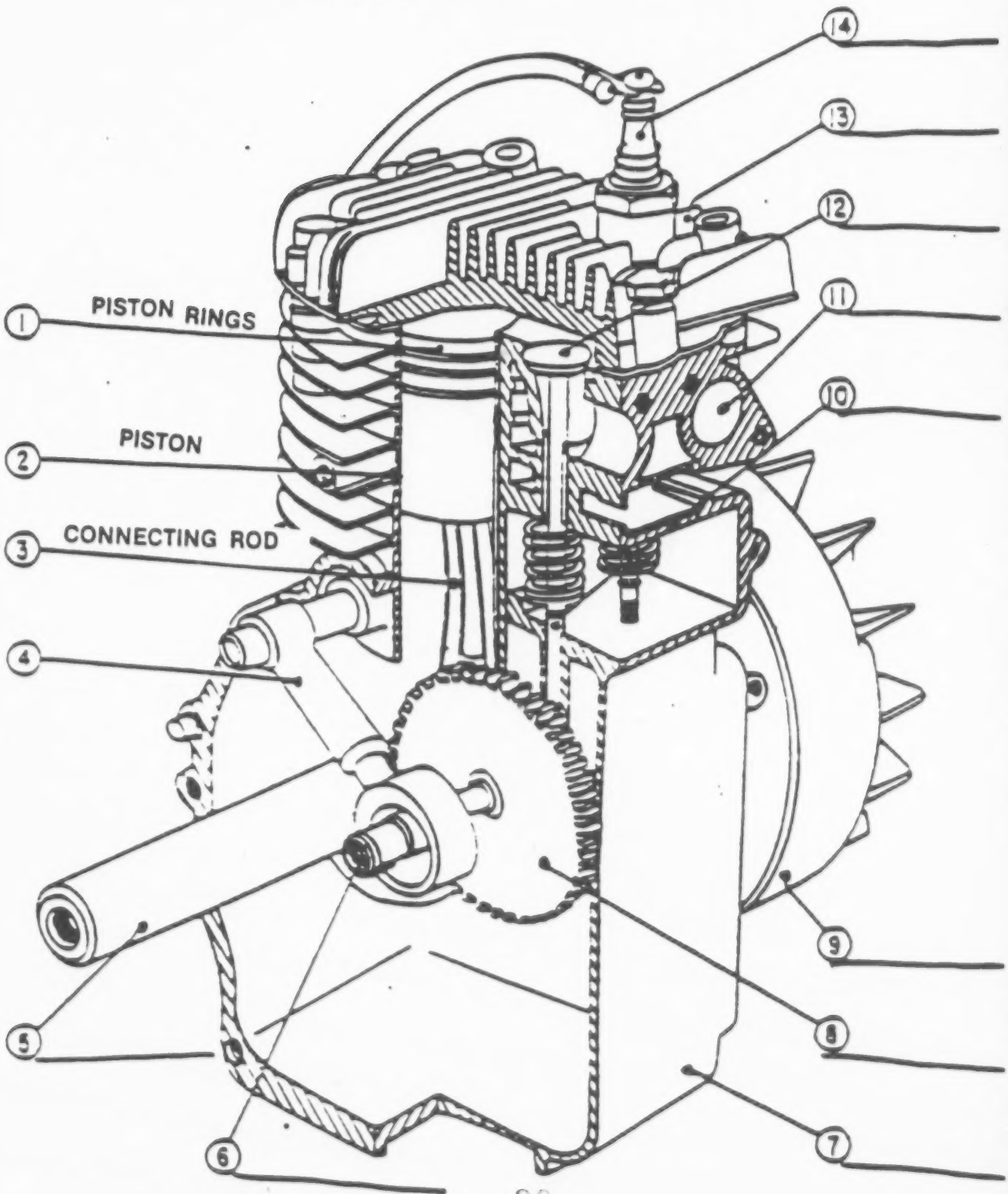


79

APPENDIX N

Engine Illustration

FOUR-CYCLE ENGINE CUTAWAY



Engine Parts Assembly - Student Sheet

FUNCTION OF THE AIR CLEANER ASSEMBLY

AIR FILTER ASSEMBLY	A device for filtering, cleaning, and removing dust from the air before entering the carburetor
AIR FILTER SCREW	Attach air cleaner to carburetor
AIR CLEANER COVER	To hold air cleaner element in the body
AIR CLEANER CUP	To keep the filter from being sucked into carburetor
AIR CLEANER BODY	To hold the air cleaner element
AIR CLEANER ELEMENT	To remove air borne dust and grit from entering the carburetor
AIR CLEANER GASKET	to seal the air borne dust out of the carburetor

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APPENDIX P

Engine Parts Assembly - Student Sheet

HOW TO ASSEMBLE THE AIR CLEANER ASSEMBLY

INSTRUCTION: ASSEMBLE IN ORDER, STARTING WITH NUMBER 1

1. Install air cleaner gasket to carburetor

   (NOTE: Make certain the air cleaner gasket to carburetor gasket is in good condition and in place; replace if necessary.)

2. Install air cleaner body to gasket

   (NOTE: Squeeze the excess oil from the Polyurethane Air Filter Element)

3. Install Polyurethante Air Filter Element into body

4. Install cup into filter element

   (CAUTION: Assemble low points toward narrow edge of element.)

5. Install air cleaner cover

   (NOTE: Make sure the air cleaner faces in the correct direction)

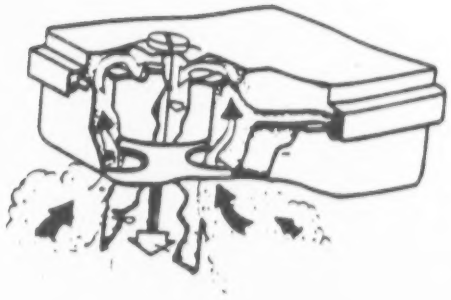
6. Install air cleaner screw

   (CAUTION: Avoid over tightening as this can cause carburetor warpage or improper operation of the choke)

CARBURETION
Air Cleaners

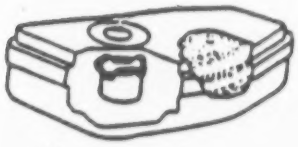
APPENDIX C

Engine Parts Assembly - Illustration



AIR FILTER ASSEMBLY

AIR FILTER SCREW

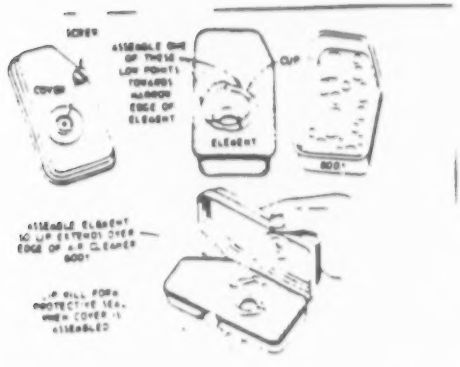


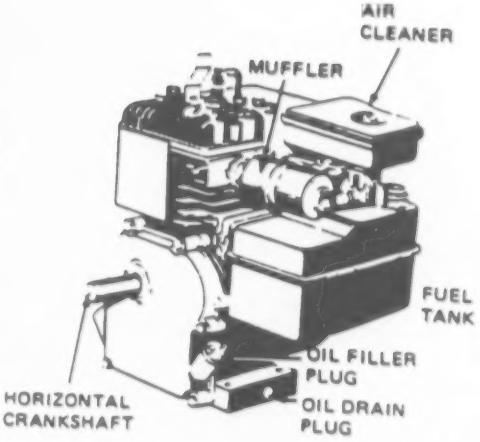
Air cleaner- Cover, Cup and Body

AIR FILTER

ELEMENT AIR CLEANER

Gasket





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APPENDIX R

(Sample Form)

Cooperative Group Learning

Peer Evaluation Form

Rating for "Students":

Rating Scale:
1 poor
2 fair
3 good
4 very good
5 excellent

Please rate the "students" according to their individual work effort and their "spirit" of cooperation:

	Student: (name)	Student: (name)
Work Effort	4	3
Cooperation	4	2
TOTALS	8	5

Note: Please keep your ratings CONFIDENTIAL!

Please be honest and fair in your ratings.

Remember, these scores are added to the student's grade points.

(signature) (signature) (date)

COMMENTS:

APPENDIX S

(Sample Form)

Cooperative Group Learning

Peer Evaluation Form

Rating for Student "Teachers":

Rating Scale:
1 poor
2 fair
3 good
4 very good
5 excellent

Please rate the "teachers" according to their individual teaching ability and helpfulness:

	Teacher: (name)	Teacher: (name)
Teaching ability	3	4
Helpfulness	4	2
TOTALS	7	6

Note: Please keep your ratings CONFIDENTIAL!

Please be honest and fair in your ratings.

Remember, these scores are added to the student's grade points.

(signature) (signature) (date)

COMMENTS:

APPENDIX T

(Sample Form)

Cooperative Group Learning

Self-Evaluation Form

Student Self-Evaluation:

Rating Scale:

1 poor
2 fair
3 good
4 very good
5 excellent

Please rate yourselves according to your COMBINED work effort and "spirit" of cooperation:

	Student _____ (name)	Student _____ (name)
Work Effort	3	
Cooperation	4	
TOTALS	7	

Note: Each student receives the same scores.

These scores must be agreed upon by both students.

These scores will be added to each INDIVIDUAL student's grade points.

Please be honest and fair in your rating of yourselves.

_____ (signature) _____ (signature) _____ (date)

COMMENTS:

APPENDIX U

Piston Assembly

Sample quiz questions generated by each cooperative learning group (one question per group (5 groups)

1. Do you need a oil ring for the engine to work?
2. How does the piston work?
3. Why do you need the piston rings?
4. Do you need the retaining rings?
5. Why do we oil the piston?

APPENDIX V

Air Cleaner Assembly

Sample quiz questions generated by each cooperative learning groups (one question per group (10 groups)

1. How could we find out if the air cleaner isn't broken?
2. What is the air cleaner used for?
3. Why is the element oil bathed?
4. How does the air cleaner work?
5. What is the sponge used for?
6. How do you clean the air filter?
7. How often does the air filter need to be cleaned?
8. Is it vital to the engine life?
9. If you don't have an air cleaner when running an engine will it still run when mowing a lawn?
10. Do you need that gasket?

APPENDIX W1

(Sample data collection form)

(Used for initial data collection
and post data collection)

INAPPROPRIATE CLASSROOM BEHAVIORS
Work Habits

Teacher/Researcher Observation:

Dates:	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY
Off-Task					
Low Productivity					
Not Working Independently					
Careless work Behaviors					
Totals					

Totals by Category:

Off-Task Daily Average

Low Productivity Daily Average

Not working Indenpendently Daily Average

Careless work Behaviors Daily Average

Notes: Numbers in chart are coded to student names.

Total weekly incidents:

Average number of daily incidents:

APPENDIX W2

(Sample data collection form)

(Used for initial data collection
and post data collection)

INAPPROPRIATE CLASSROOM BEHAVIORS
Disruptive Behaviors

Teacher/Researcher Observation:

Dates:	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY
General Disruption of the Class					
Verbal or Physical Abuse					
Excessive Tardiness or Truancy					
Totals					

Totals by category:

General Disruption of the Class: Daily average

Verbal or Physical Abuse: Daily average

Excessive Tardiness or Truancy: Daily average

Notes: Numbers in chart are coded to student names.

Total Weekly incidents:

Average number of daily incidents:

APPENDIX W3

(Sample data collection form)

(Used for intial data collection
and post data collection)

Student Performance Points

From the teacher/researcher grade book:

Students	1	2	3	4	5	6	7	8
Oral class participation								
Hands-on participation								
Reference notebooks								
Quiz score								
Student totals								
Percentage grades								

Notes: Maximum number of points awarded for each category is 10.

Perfect weekly score is 40 points.

All grades 60% or higher are passing grades.

APPENDIX X

Post Data Collection
Action Plan (November 28-30, 1994)

Inappropriate Classroom Behaviors
Work Habits

Teacher/Researcher Observation:

	November 28	November 29	November 30
Off-Task	1-3-5 (3)	8-2-1 (3)	7-4-3-6 (4)
Low Productivity	8-5 (2)	4-1 (2)	1-3-7 (3)
Not Working Independently	1-5-8 (3)	2-4-1-8 (4)	3-6-7 (3)
Careless work Behaviors	(0)	4 (1)	6 (1)
Totals	8	10	11

Totals by Category:

Off-Task	10	Daily Average: 3.3
Low Productivity	7	Daily Average: 2.3
Not working Independently	10	Daily Average: 3.3
Careless work Behaviors	2	Daily Average: 0.6

Notes: Numbers in chart are coded to student names.
Example: 1-3-5 Mary-Joe-Bob
Students are coded 1-8

Numbers in parentheses indicate the

number of incidents recorded.
Example: (3) is 3 incidents.

Total number of incidents recorded for the 3 day period: 29

Average number of daily incidents: 9.6

APPENDIX Y

Post Data Collection
Action Plan (November 28-30, 1994)

Inappropriate Classroom Behaviors
Disruptive Behaviors

Teacher/Researcher Observation:

	November 28	November 29	November 30
General Disruption Of the class	1-5 (2)	6-8-3 (3)	2-4-3 (3)
Verbal or Physical Abuse	(0)	3 (1)	6 (1)
Excessive Tardiness or Truancy	(0)	(0)	1 (1)
Totals	2	4	5

Totals by category:

General Disruption Of the class: 8 Daily Average: 2.6

Verbal or Physical Abuse: 2 Daily Average: .66

Excessive Tardiness or Truancy 1 Daily Average: 0.3

Notes: Numbers in chart are coded to student names.
Example: 1-3-5 Mary-Joe-Bob
Students are coded 1-8

Numbers in parentheses indicate the number of incidents recorded.
Example: (3) is 3 incidents.

Total number of incidents recorded for the 3 day period: 11

Average number of daily incidents: 3.6

APPENDIX Z

Post Data Collection
Action Plan (November 28-30, 1994)

Student Performance Points

From the teacher/researcher grade book:

Students	1	2	3	4	5	6	7	8
Oral class Participation	6	5	5	6	4	5	6	5
Hands-on Participation	7	7	7	8	7	8	8	8
Reference notebooks	6	7	6	7	7	7	7	6
Quiz Score	7	8	7	7	7	7	7	7
Student totals	26	27	25	28	25	27	28	26
Percentage Grades	65%	67.5%	62.5%	70%	62.5%	67.5%	70%	65%

Notes: Maximum number of points awarded for each category is 10.

Perfect weekly score is 40 points.

Scores ranged from a low of 25 (62.5%) to a high of 28 (70%) for the above 8 students (all passing grades).

All grades 60% or higher are passing grades.

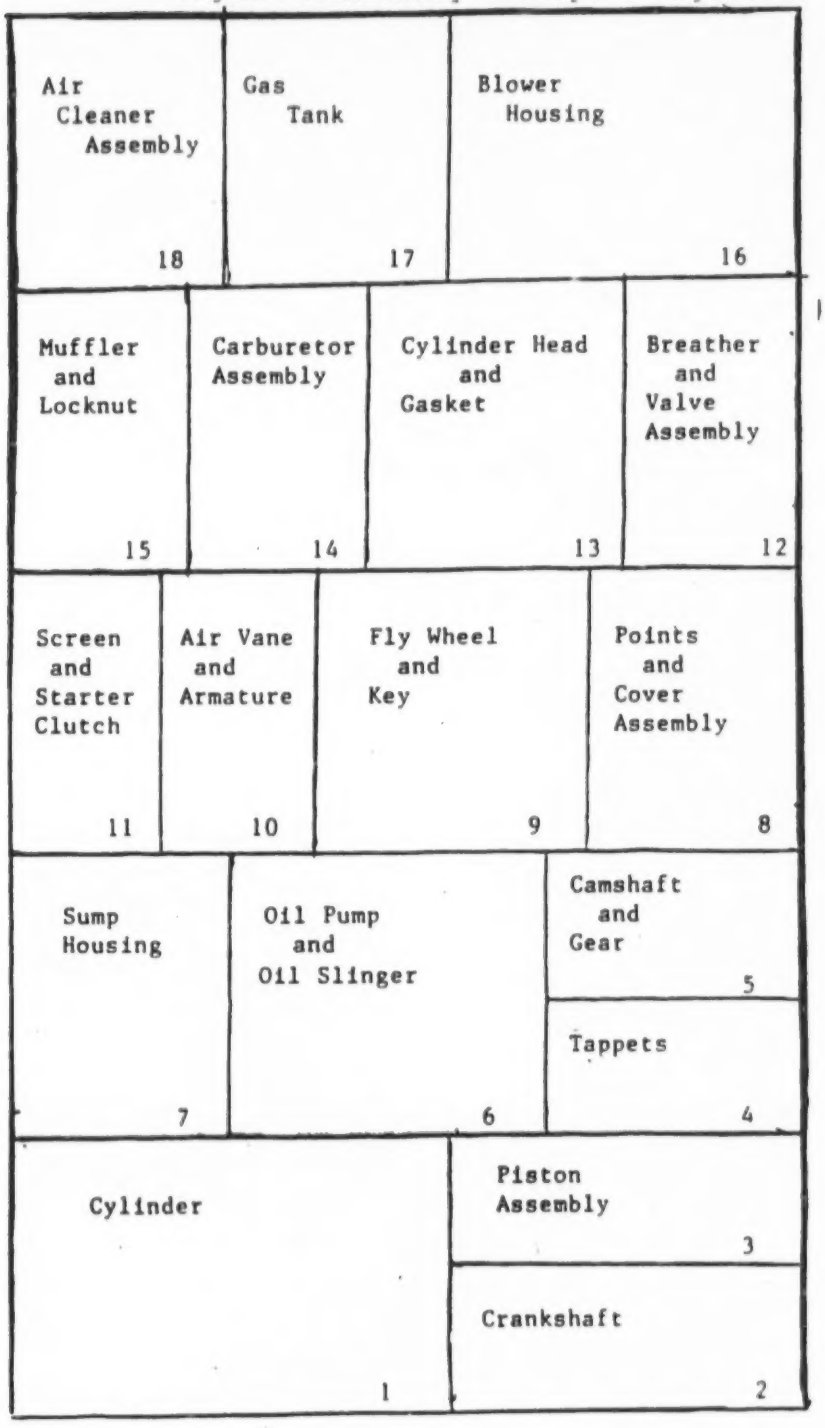
APPENDIX a
Engine Reassembly - Student Sheet
SMALL ENGINE REASSEMBLY

1. Coat all metal surfaces with oil before assembly
2. Install crankshaft in block
3. Install piston assembly in block
4. Install rod cap, oil slinger and lock tabs
   (CAUTION: CHECK ALIGNMENT MARKS)
5. Torque rod bolts to specifications
6. Install tappets
7. Install camshaft and cam gear
   (CAUTION: ALIGN CAM GEAR AND CRANKSHAFT TIMING GEAR MARKS)
8. Install oil pump
9. Install gasket on block
10. Install sump cover
11. Torque sump bolts
12. Install points, plunger and cover
    (CAUTION: SET POINTS)
13. Install flywheel and key
14. Install armature and air vane
    (CAUTION: ADJUST ARMATURE AIR GAP)
15. Install starter clutch and screen
16. Install valves, spring, keeper and breather cover
    (CAUTION: CHECK CLEARANCE)
17. Install cylinder head assembly
18. Install muffler
19. Install carburetor and linkage
20. Install blower housing
21. Install Gas tank
22. Install air cleaner assembly
23. Install new spark plug
    (CAUTION: TEST AND GAP PLUG)
24. Fill with oil
25. Fill with Gasoline
26. Adjust carburetor
27. Start Engine

INSTRUCTION: Assemble in sequence, starting with number 1.

APPENDIX b
SMALL ENGINE REASSEMBLY

Engine Reassembly - Graphic Organizer



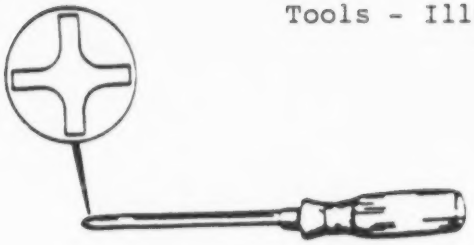
ORGANIZER BOX

INSTRUCTION: ASSEMBLE IN ORDER, STARTING WITH NUMBER 1

APPENDIX c

Basic Hand Tools

Tools - Illustrated Study Sheet



PHILLIP SCREWDRIVER
To remove a phillip screw

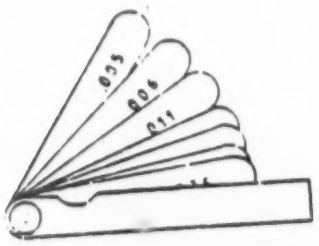
BALL PEEN HAMMER
Tapping things into place

OFFSET SCREWDRIVER
To remove screw in awkward places

COMBINATION WRENCH
To install or remove fastener

RATCHET WRENCH
To remove or tighten bolts or nuts

NEEDLE NOSE PLIER
To grip small parts



FEELER GAGES
To measure clearance

CENTER PUNCH
To mark parts

SCRAPER
To remove dirt and carbon

STANDARD SLOT SCREWDRIVER
To remove or replace screws

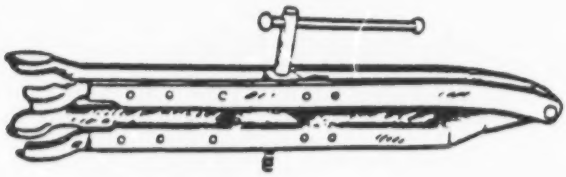
APPENDIX d

Basic Hand Tools

Tools - Illustrated Study Sheet

BRUSH
To clean parts

UNIVERSAL JOINT
To use in tight places



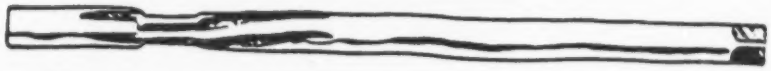
VALVE SPRING COMPRESSOR
To remove and replace valve springs

VALVE LAPPING TOOL
To lap valves

VISE GRIP
To remove rusted bolts and nuts

COLD CHISEL
To cut metal

DIAGONAL CUTTER
To cut wire



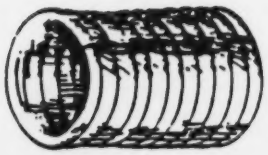
REAMER
To ream holes

WIRE BRUSH
To clean parts

PLIER
To grip parts

Basic Hand Tools

Tools - Illustrated
Study Sheet



HELI COIL INSERT
To repair a damaged thread

6 POINT SOCKET
To remove bolts and nuts

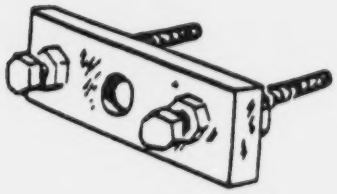
HONE
To clean and smooth cylinder

ADJUSTABLE WRENCH
Wrench to fix any size nuts or bolts

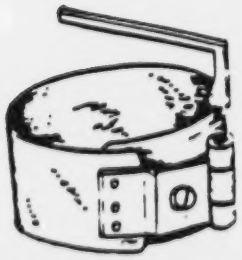
DRILL BIT
To drill holes

CLUTCH WRENCH
To remove starter clutch

FLYWHEEL HOLDER
To hold flywheel



PULLER
To remove flywheel



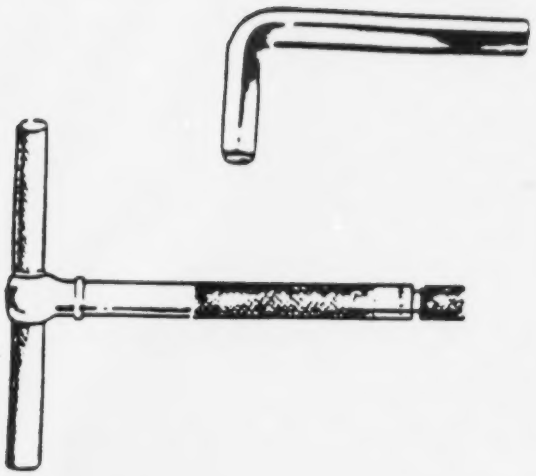
PISTON RING COMPRESSOR
To install piston inside cylinder

TORQUE WRENCH
To tighten bolts and nuts properly

APPENDIX f

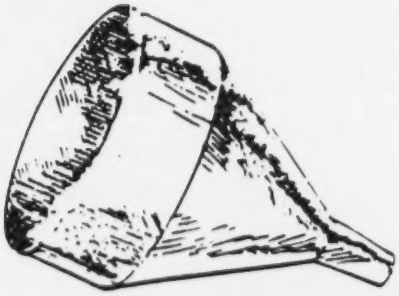
Basic Hand Tools

Tools - Illustrated Study Sheet

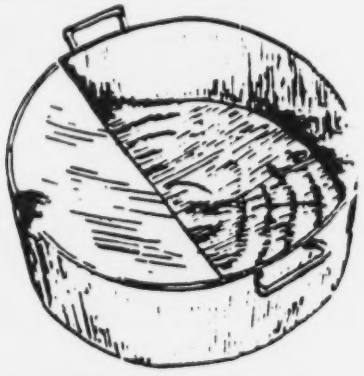


HEX WRENCH
To remove allen scfew

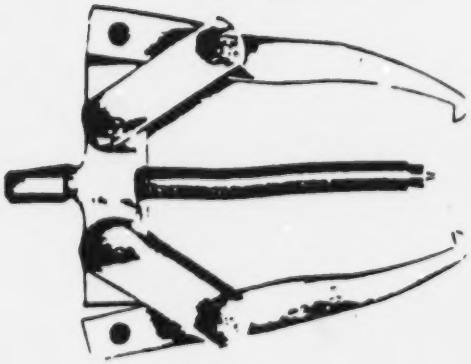
TELESCOPING GUAGE
To measure inside cylinder



FUNNEL
To pour liquid



WASH PAN
To clean parts

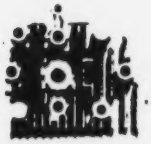


FLYWHEEL PULLER
To remove flywheels and pulleys

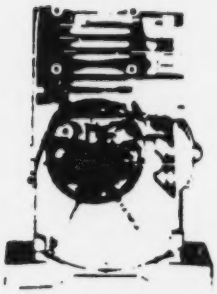
APPENDIX g

Engine Parts - Illustrated Study Sheet

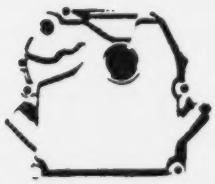
BASIC COMPONENTS



CYLINDER HEAD
The part that encloses the cylinder bore

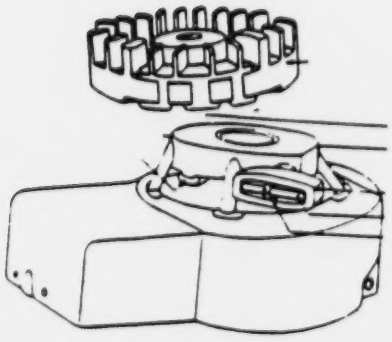


CYLINDER BLOCK
The basic framework of the engine



CRANKCASE HOUSING
Lower part of the engine in which the crankshaft rotates. Also part of the oil pan.

CRANKSHAFT
The main rotating member



FLYWHEEL
Help even out power surges

BLOWER HOUSING
Houses the mechanical starter

APPENDIX h

Engine Parts - Illustrated Study Sheet

BASIC COMPONENTS

STARTER PULLEY
To hold starter spring

CARBURETOR SCREW
To hold gas tank to carburetor

OIL CAP
To hold oil in block

GASKETS
To seal

VALVES
To open and close hole

CONNECTING ROD
To connect to wrist pin and crank shaft

WRIST PIN
To hold piston to connecting rod

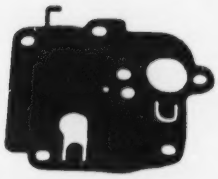
WRIST PIN CLIP - To hold wrist pin

PISTON
To transmit motion

RINGS
For sealing

BASIC COMPONENTS APPENDIX I

Engine Parts -
Illustrated Study sheet



CARBURETOR DIAPHRAGM
To pump and seal

GOVER VANE
Controls engin speed

STARTER CLUTCH
To turn the crankshaft

MUFFLER
To muffle the sound

LOCK NUT
To lock the muffler

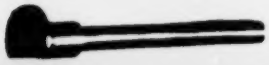
GASOLINE CAP
To hold the gasoline in the tank

GOVER LINK
To connect gover vane

GOVER SPRING
To return gover vane

NEEDLE VALVE
To adjust idle

113



FUEL PIPE
To pick up gasoline

APPENDIX J

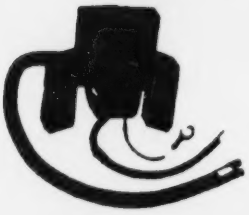
BASIC COMPONENTS

Engine Parts - Illustrated Study Sheet

STARTER GRIP
To help start the engine

STARTER SPRING
Help to rewind rope

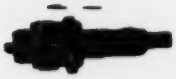
BOOTH
Stop high-voltage leakage across the spark



ARMATURE
To produce high voltage

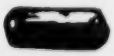
POINTS
To break the current

PLUNGER
To open the points



SPARK PLUG
To ignite the gases

CONDENSER
To reduce arcing



FLYWHEEEL KEY
To hold the flywheel

MAGNETRON MODULE
Self-contained ignition